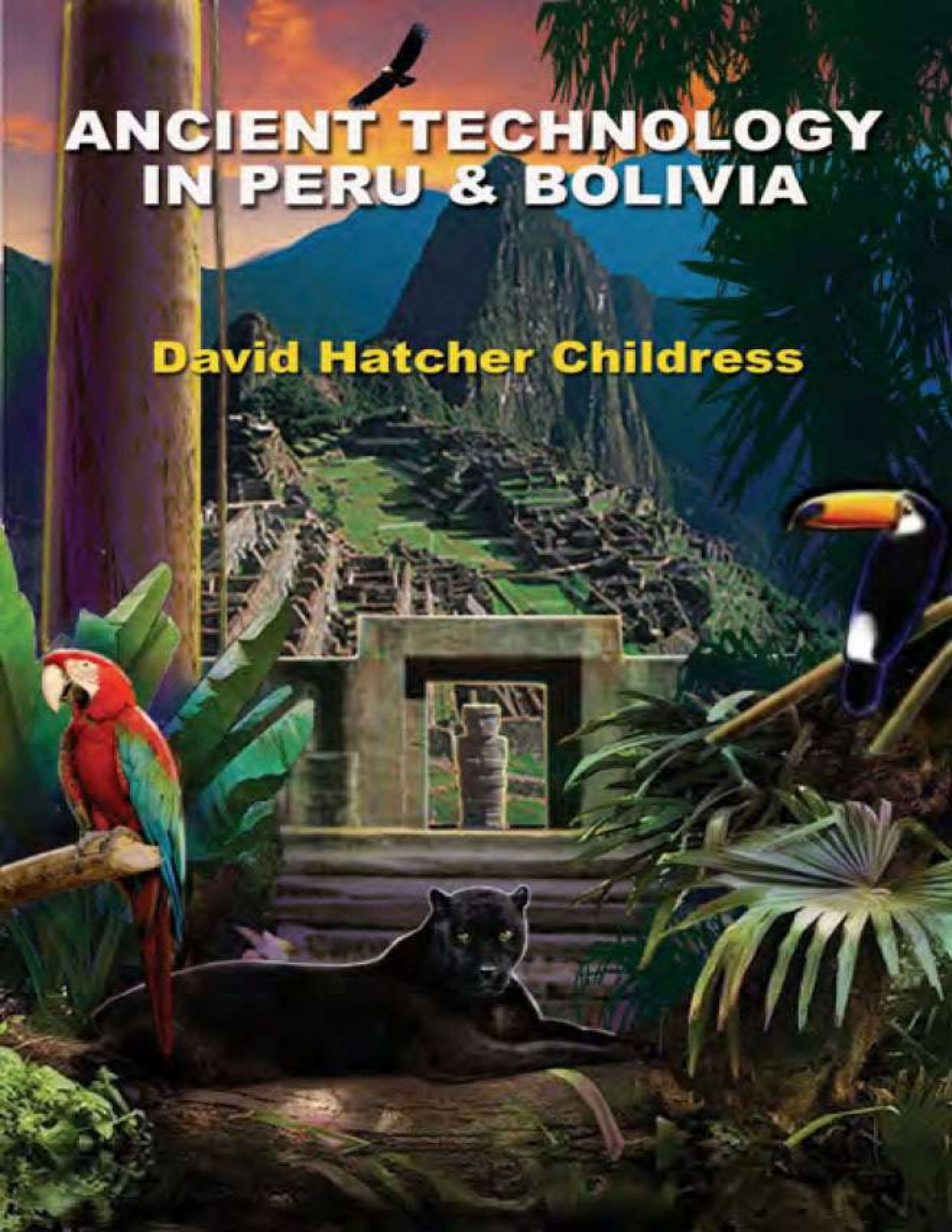
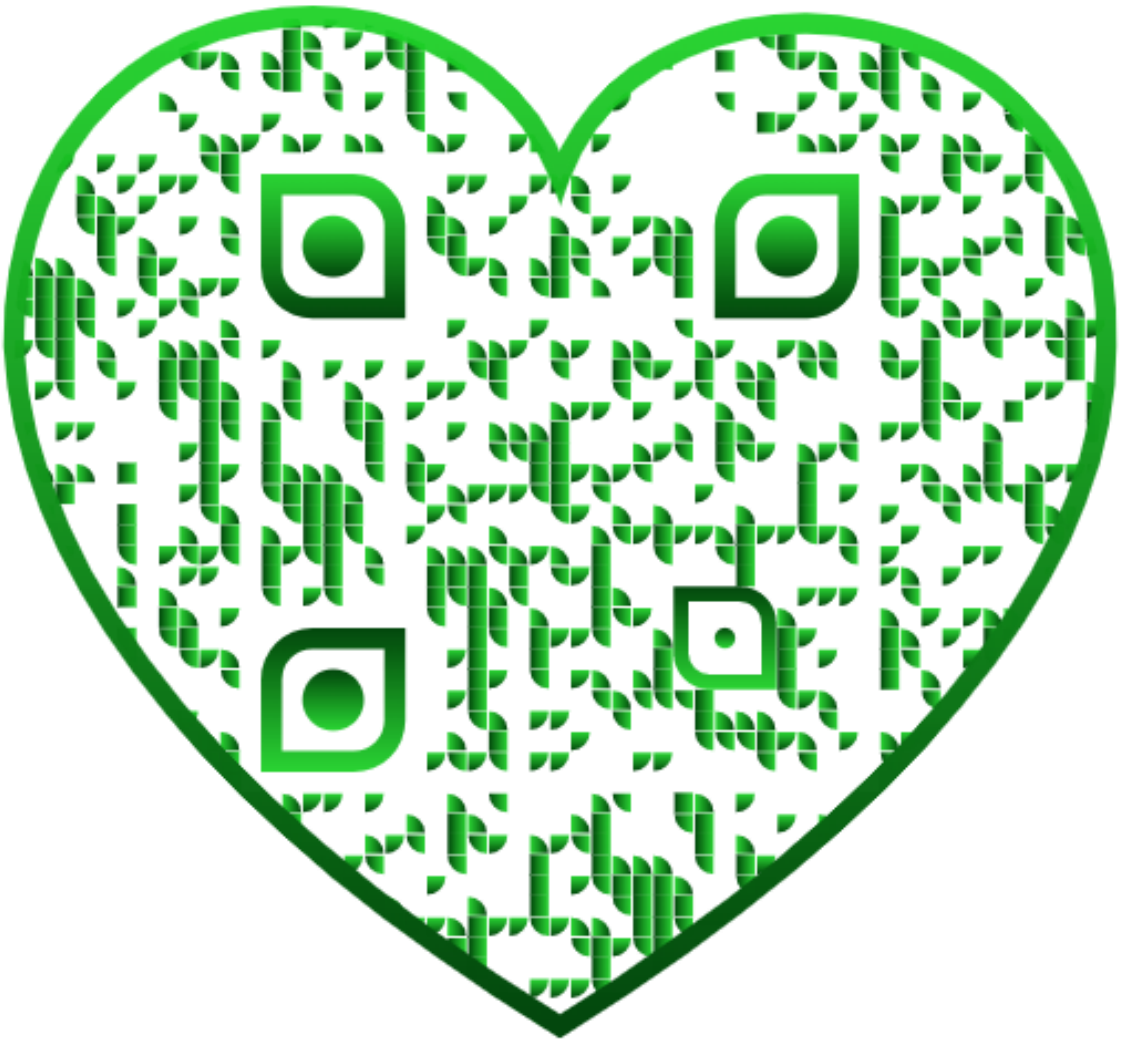
ANCIENT TECHNOLOGY IN PERU & BOLIVIA

David Hatcher Childress





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ICA
PUNO
AREQUIPA
MOQUEGUA
TACNA
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International boundary
Department boundary
National capital
Department capital
Railroad
Road

Two Sumeiian clay figurines from the Ubaid Period (5000 BC) showing elongated heads. The male on the left is from Eridu and the female on the right is from the ancient city of Ur. Are they the Annunaki of ancient Sumerian legend?

NOVA ESPAGNA
MARE DEL
SVR
OCCIDENS
PERV
Chili
STRETT
DI MAGEL

CHAPTER ONE

THE LOST WORLD OF SOUTH AMERICA

If thou seekest El Dorado thou must ride,
boldly ride over the Mountains of the Moon
through the valley of the shadow...
—Edgar Allen Poe

There was a sudden lurch and bounce as the plane's wheels hit the tarmac of the airport runway. I looked out the window at the Lima, Peru airport buildings where the plane would be docking. I was back in South America, a land of mystery and adventure.

I had been here many times before, starting in 1985. I had first come to South America after traveling through Asia and Africa for years. A year after that 1985 trip, my third book was published, *Lost Cities and Ancient Mysteries of South America*, a paperback book still in print today and regarded as a classic in the field of archeology and travel adventure.

South America was still as much an enigma on my recent arrival as it was nearly 30 years ago. The continent of mystery and adventure that had attracted me back then still held its many secrets and lost cities, ancient ruins and baffling architecture that some attributed to ancient aliens. Indeed, in the many years since I first came to South America, I had traveled to many corners of the earth, written other books, and had appeared on a number of television shows, including one for the History Channel called *Ancient Aliens.*

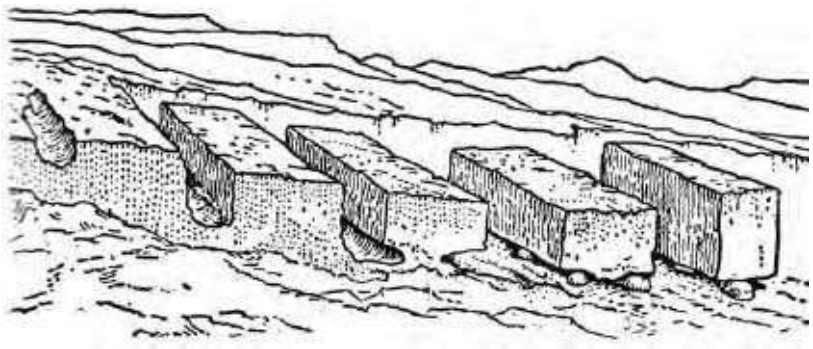
That show postulated that many of the colossal megalithic remains around

the world were the work of ancient astronauts and hybrid humans of their making. While some thought of the show as just a sensational promotion of the theory that ancient astronauts had made (or had a hand in making) many of the astonishing and baffling monuments around the world, including some in South America, I seriously wondered about the technology used in building some of these structures and just who the builders actually were. Were they extraterrestrials, or was there an ancient human culture with very advanced technology that constructed these giant walls; or maybe a combination of both?

The myth-busters maintain that there is nothing that special about these ancient monuments. Hard, time-consuming work, patience and massive manpower were all that were needed to quarry, move and erect these stone megaliths. Sure, in many cases the stonework is exceedingly excellent, but it's not that big a deal. Why denigrate the talent of the locals by attributing their work to aliens or advanced technology?

But how and why would these people move giant blocks of stone many miles? The stone is often very hard granite or basalt and very difficult to cut and shape. Was it done with crude stone hammers and metal chisels, or was it done with precision equipment that used diamond-tipped saws, drills and other power tools? All of these questions fascinated me.

Using the funds and resources now available to me, I decided to journey again to La Paz, Lake Titicaca and the Cuzco area to do more research. I asked British/American engineer and friend Christopher Dunn to accompany me to Peru and Bolivia to have a look at some of the worked stone and give his professional engineering opinion. He was the author of two books, *The Giza Power Plant* and *Lost Technologies of Ancient Egypt.* I was a fan of his work and had been on several trips with him to Egypt, and I was a believer in ancient technology that included hard metals, electricity, complicated machines and high technology like levitation, anti-gravity and flight. My own books often discuss these topics and some of my books, like *Technology of the Gods* and *Vimana Aircraft of Ancient India and Atlantis*, are well known for their exposition of the concept of advanced technology in the ancient world.



A typical method for excavating megalithic blocks at a quarry.

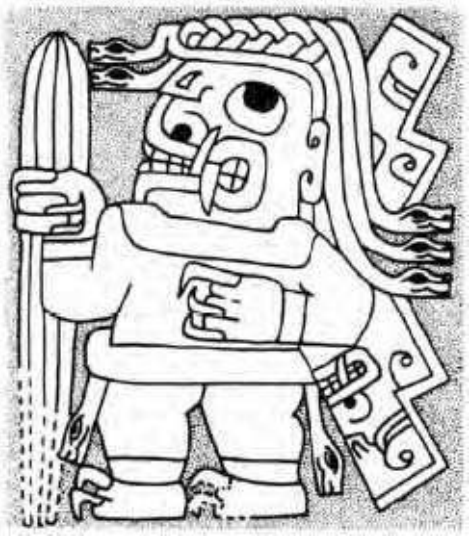
Chris, my wife Jennifer, and a few members of the World Explorers Club who also accompanied us, followed me off the plane. We got our luggage and exited the main terminal of the Hugo Chavez International Airport. I arranged for two taxis to take us to the El Condado Hotel in the Miraflores district of Lima. After we settled into our rooms we walked down the coast and had lunch at a restaurant on the edge of a cliff over the Pacific Ocean.

I asked Chris why he believed that the ancient Egyptians had used power tools to cut and shape granite and basalt blocks in Egyptian structures, including the Great Pyramid. He explained that it was very difficult to make the long, perfectly straight granite slabs that can be seen in Egypt; plus, he had observed the inside corners of granite blocks that had a very precise edge that would be almost impossible to make without precision cutting tools. Stone hammers and copper chisels, which mainstream Egyptologists claim were used to make these monuments, would not be capable of the precise work. It is claimed that the Egyptians did not have iron tools, but they must have had not only these but drills, and even large diamond-tipped saws!

I pointed out that the Olmecs of Mesoamerica were also said to have lacked iron as a stonecutting tool. But tons of iron slag were found near the Olmec capital of La Venta, and only iron tools, and probably only power tools, could have carved the 20-ton colossal heads, all made of extremely hard basalt, for which the Olmecs were famous. One of the strange African-looking heads has strange pockmarks dished out of the rock, possibly in an effort to deface the gigantic head. The dished-out pockmarks look so regular and smooth that it appears that some power tool was used to make the numerous indentations. I detail this in my book *The Mystery of the Olmecs.*[6]

Pockmarked head from San Lorenzo, Mexico now at the Xalapa Anthropology Museum. It is a mystery how and why these man-made pockmarks were later scooped into the hard basalt statue.

Chris believes that some of the statues in Egypt, many of them huge granite effigies, were also done using some sort of computer-aided design tool that cut an exact mirror image on both sides of the face and body. The astonishingly precise polished granite statues of ancient Egypt are so perfect and lifelike that they are as good as any granite statue we could make today. Chris said he believes that the Egyptians must have had very large metal machines with drills and cutting heads to cut blocks and make their huge statues and obelisks.



Chavin Birdman with hallucinogenic cactus.

I told Chris about my belief that the vimana flying machines of ancient Indian and Asian lore actually existed. Could they have been used in some ancient cultural exchange to bring stonecutting equipment to South America? Chris laughed and took a drink.

“Well, I suppose they could have done that,” he said. “It will be interesting to examine carefully the stonework at Tiwanaku and Puma Punku.”

The next day we went to the Archeology Museum and viewed some of the exhibits. The standard history of ancient South America is that the oldest society was Chavin, a megalithic culture in the Cordillera Blanca mountains near Huaraz.

The Megalithic Complex at Chavin de Huantar

I first visited Chavin de Huantar (sometimes just called Chavin) in 1990, taking an overnight bus to Huaraz, the skiing capital of Peru. Huaraz is the capital of the Ancash Department and is about 420 kilometers north of Lima. Located at over 10,000 feet (3,000 meters), Huaraz is surrounded by the highest mountains in Peru known as the Cordillera Blanca, or White Range, because of their permanent glaciers and heavy snow covering.

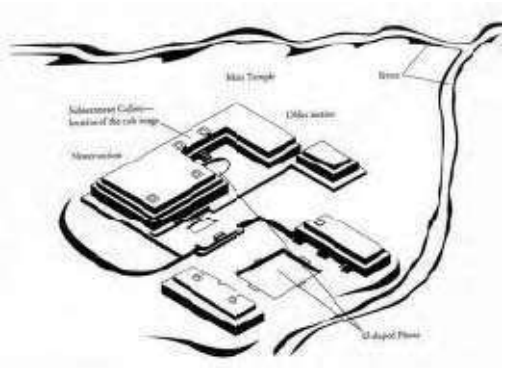
I stayed for a couple of nights in this pleasant alpine town of skiers, mountain climbers and trekkers, and then took a local bus east over a high pass to the town of Chavin. I stayed there for two nights and investigated the archeological site during the day. I was amazed by the complexity of the site at the time, and I returned for another visit in early 2011 with Jennifer.

Chavin de Huantar is thought by many Peruvian archeologists to be the

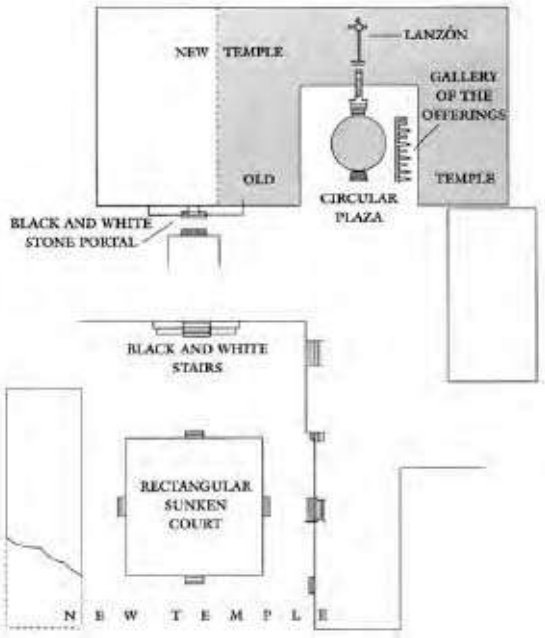
genesis of South American civilization. They think that the early phases of Chavin began over 5,000 years ago, circa 3000 BC and the massive structures that can be seen today were in use before 900 BC. The building of Tiwanaku followed shortly after the building of Chavin, according to the mainstream view. Indeed, there are many similarities between Chavin and Tiwanaku and it would seem that the two are very much linked. Chavin is thought to have ceased to be a major center around 400 BC and became ruins in a remote and unpopulated mountain valley.

Today, the village of Chavin, hundreds, even thousands of years old, is largely built of stones salvaged from the old site of Chavin de Huantar. What remains of the archeological site is basically the largest megalithic blocks and the extensive underground structure. Portions have been reconstructed by modern archeologists.

The central feature of the underground temple is a monolith carved with a toothy monster said to be the object of worship at the temple. Legends speak of the complex going nine or 12 stories underground, where a huge gem can be found. Naturally, the complex has long since collapsed and is buried with rubble in the lower parts. Tourists today are allowed to go down to about the third level.



Map of Chavin showing the diverted river.



Map of the central area of Chavin.

The site is massive and impressive. A good description can be found in the Time-Life book *The Search for El Dorado:*

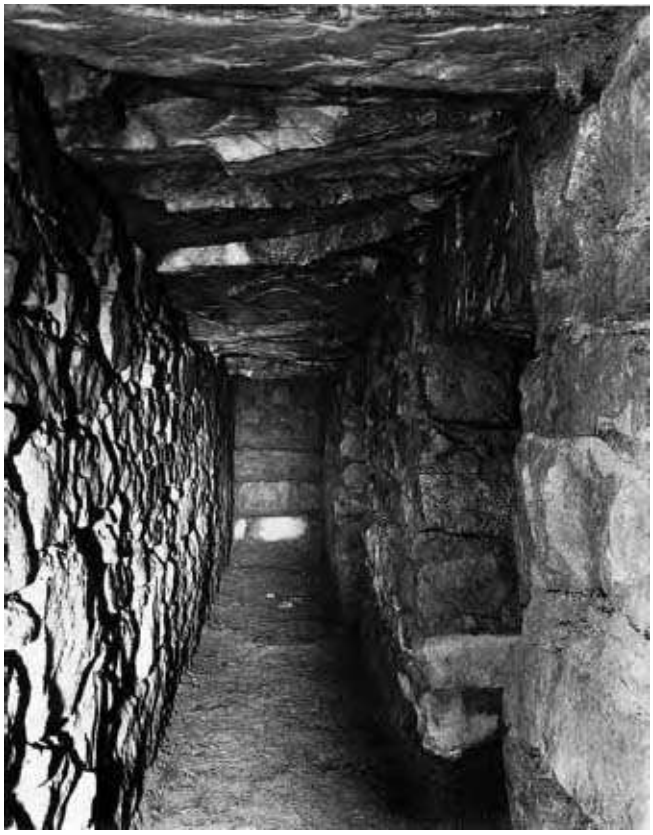
> Much of Chavin de Huantar's drawing power stemmed from its awe-inspiring architecture and monumental sculptural details. In its early phases the temple consisted the temple consisted of three enormous platform mounds arranged in a U-shape atop a pedestal of cyclopean stone blocks. Gazing upon its massive walls, worshipers beheld a bas-relief frieze of anthropomorphic creatures, spotted jaguars, writhing serpents, and wild birds of prey, below which projected a row of monstrous human heads sculpted from stone blocks weighing as much as half a ton each. Tenons at the back of the heads fit snuggly into mortise joints in the masonry, creating the illusion that the sculptures were floating some 30 feet above the ground.
>
> A frieze depicting similar figures—jaguars and exotically costumed humans —adorned the sunken, circular plaza that lay between the three mounds. A white granite staircase climbed from the plaza up to the temple's summit.
>
> In time Chavin de Huantar's massive structures proved too small, and laborers doubled the size of the southern mound and added terraced platforms and sunken rectangular courtyards southeast of

the circular plaza. A portico framed by black and white pillars graced the front of the southern wing, which is referred to as the New Temple, whose top now became the focal point of the public ceremonies.

Pilgrims gathering on the New Temple's main plaza would have had a commanding view of the ritual platform. No exterior staircase surmounted this new structure; the mound's apparently inaccessible summit was instead approached by a labyrinthine network of interior passages and stairways. Garbed in fine cotton, woolen, or feathered tunics and adorned with gold nose ornaments, earspools and headdresses, Chavin de Huantar's priests must have elicited considerable wonder when, as if by magic, they emerged on top.[44]

The megalithic eastern wall of the New Temple at Chavin.

A rare 1934 photo of the megalithic bridge once at Chavin, now gone.


Gallery tunnel under the New Temple at Chavin, part of an extensive network of channels.

These pilgrims are then thought to have left with various mementos of their visit to the cyclopean complex, including clay objects, gold objects, painted textiles and other “souvenirs.” These have been found in distant mountain and coastal areas of Peru. Renowned Peruvian archeologist Julio Tello discovered a

gold gorget representing two intertwined snakes over 280 miles away from the site (at Chongoyape) that he identified as coming from Chavin de Huantar.[44] Was this gold artifact made at the megalithic site? Were other artifacts, such as the ceramics and fabrics made there as well? Was Chavin a manufacturing center? Archeologists do not really address this issue.

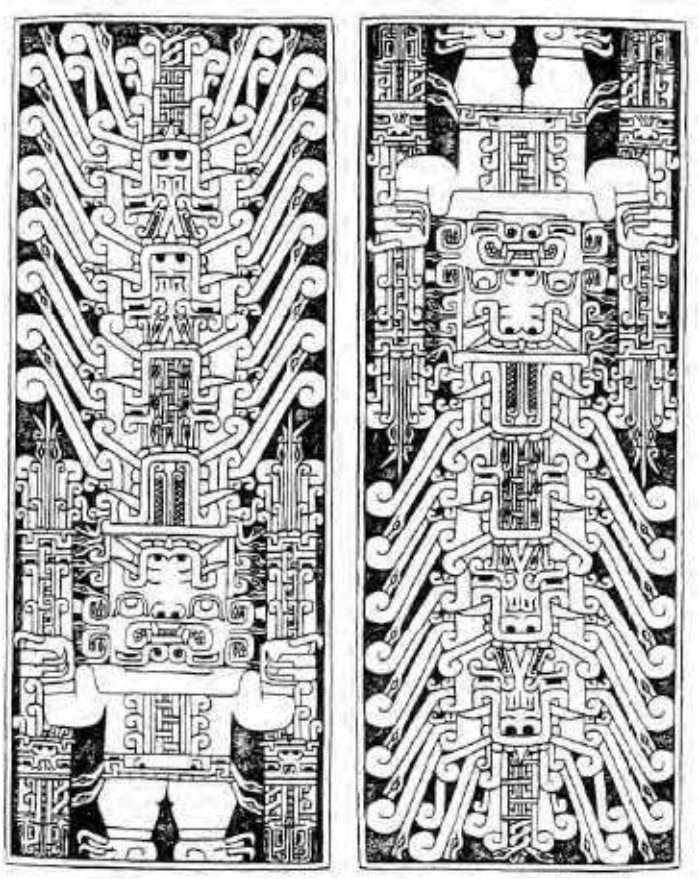
Chavin de Huantar is usually described as a ceremonial center, located at the headwaters of the Maranon River. Two rivers converge at Chavin, the Mosna River and the Huanchecsa River. The builders of the complex actually diverted one of the rivers to enter the complex. Similar things were done at Tiwanaku. Chavin is at over 10,000 feet in the Andes and it is in a very steep valley. Why would such a complex, a huge engineering work, be placed in this rather remote and difficult spot?

The Circular Plaza at Chavin is decorated with a gallery of carved figures.

Megalithic drainage tunnel at Chavin, part of the washing of ores?

Well, according to the major archeologists working at the site, it was a religious and ceremonial center “centrally located” to the Andean people and the coastal areas as well. Here the people ingested psychedelic cactus extracts and generally attended religious ceremonies of some kind. While this may be partially true, and certainly such ceremonies with psychotropic substances must have occurred, it seems the builders were very sober geniuses who were designing very complicated facilities. They not only built a pre-designed underground complex with cut and dressed megalithic blocks, but they diverted a river into the complex as part of their design. Why did they do that?

Chavin Chimera God from Main Temple.



Front and back side of the Raimondi stela inside the Chavin complex.

Whenever gigantic blocks of granite, limestone or basalt are being used in a building, it is obvious that a great deal of organized planning is involved. The quarrying of the blocks, dressing them, moving them to the site and then erecting them is a considerable task, not one that should be taken lightly. Whoever the minds behind this endeavor were, they were very smart, skilled in engineering and architecture—and had a forward-thinking mindset. In other words, they were putting a great deal of organizational effort and cost into something that would only pay off later.

The Chavin Kuntur Wasi monolith with strange figures.

Mainstream archeologists say that the goal of this extraordinary effort, especially for a presumably primitive society, was purely ceremonial. But, like at Tiwanaku, as we will shortly see, the building of these massive “temples” is something that not only requires pre-planning, but also sophisticated stoneworking techniques—which involves metal chisels. It seems that other metal arcticles were worked at the site, too. Where were the ancient mines that produced these metals? Were they the real reason that Chavin de Huantar had been built in the first place, and a river diverted into the city?

Indeed, although Chavin may have been a cult destination as well, its original purpose may have been as a metallurgical processing plant with the diverted river used to wash ores brought down from nearby mines. Even today several mines operate in the vicinity of Chavin. The Andes Mountains contain a wealth of precious metals and other minerals, and mining occurs all over the place. The Chavin area is no exception.

In fact, the Spanish colonized Ancash and the surrounding Callejon area very quickly because of its mineral wealth. Soon there were silver, lead and tin mines being worked around Huaraz and Chavin and by the 1570s hundreds or even

thousands of Quechua-speaking workers were laboring in the mines. Mining has always been an important industry in the Andes, even before the Spanish.

In fact, one of the oldest metal objects ever found in South America allegedly came from Chavin de Huantar. It is a small snuff spoon dated to about 3000 BC fashioned "out of sheets of gold and silver foil that had been hammered into form and soldered together."[7] Therefore, we know that silver was being used at Chavin, as well as gold. Other metals may have been in use there as well, but they may have oxidized and vanished, as many metals do. Gold is virtually indestructible and items made of gold will last, unchanged, many thousands of years longer than other metal objects. Objects that are made of a mixture of gold and other metals, such as silver, will also outlast ordinary metal objects.

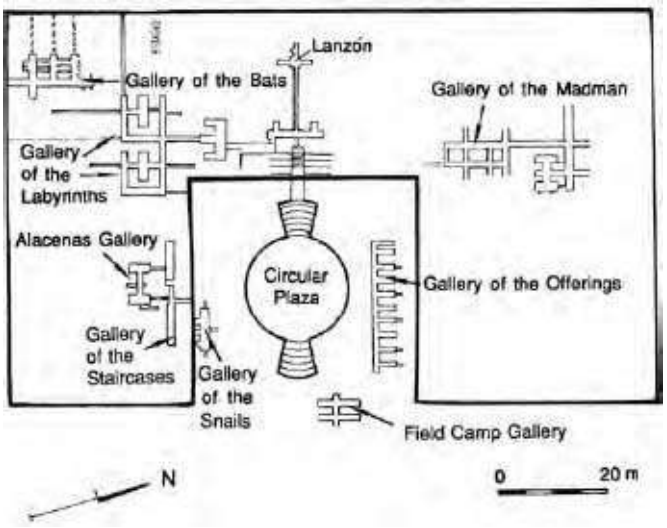
Chavin tenon head with mucus coming out of the nose.

And what would this snuff spoon have been used for? The snuff would probably have been a hallucinogenic powder of some sort, snorted by the nose from the spoon. One of the figures carved into the upper register of the circular plaza at Chavin de Huantar shows winged beings with fangs holding a staff that resembles the hallucinogenic San Pedro cactus.[7] Other strange winged birdmen appear in other Chavin art.

Another mystery concerning Chavin de Huantar is that the pottery found there is said to be some of the earliest ever found in Peru, from around 2000 BC. Richard Burger in his book *Chavin and the Origins of Andean Civilization*[7] says pottery making was adopted in Peru over 1,000 years later than in Ecuador or Colombia and even probably the Amazonian lowlands. While the earliest pottery in South America is thought to come from Valdivia, Ecuador, circa 3500 BC, no

pottery has been discovered or dated yet in Peru that is equally old. Valdivian pottery is often compared to identical Jomon pottery in Japan from the same time frame, circa 3500 BC.[7] Why did it take so long for pottery making to come to Peru? Maybe it didn't. Perhaps there was pottery in Peru from 3,500 BC that has not been dated yet. Modern ceramic dating techniques are fairly recent and many tests simply haven't been done. Certain ceramic objects like the Fuente Magna Bowl now at the Precious Metals Museum in La Paz may well be from 3500 BC (as the writing on it indicates), but no ceramic dating tests (like thermoluminescence) have been made on it yet, despite it being an important object in a major museum. We will discuss this curious object in more detail in a later chapter.

Chavin Lanzon Pillar inside the chamber.



Map of some of the underground galleries at Chavin.

So, was Chavin de Huantar an ancient mining center that later became a cult center over its hundreds of years of operation? As an early economic center, the source of copper, gold, silver, tin and bronze—and possibly even iron—Chavin would have attracted a lot of people and it must have had a very lively market during its heyday, much better then the one that can be seen there today. Indeed, when one visits Chavin in this day and time, one is struck by how lonely and isolated the spot is. This is certainly not the “Center of the World” as Cuzco is often described. This seems like a remote valley in the Andes, and that is exactly what it is. What was the purpose of building such an elaborate complex in the this location? A metallurgical processing center is the best answer, as far as I am concerned.

Chavin ceremonial snuff box.

A Shang Chinese bronze.

Speak to the earth,
and It shall teach thee.
– Book of Job 12:8

The Search for Metals, Jade and Obsidian

Ancient man has always sought out materials from the earth. Rocks are typically abundant, but certain types of rocks are more desirable and valuable than others. Obsidian and flint can be easily found in certain areas, but can be quite rare in other areas and therefore more valuable. Jade is even more rare and difficult to find and therefore more valuable, particularly because jade is a very hard—yet workable—substance.

Very much like the search for spices in eastern Indonesia by the early Portuguese explorers, the search for good sources of obsidian, which can be made into super-sharp razors, spearheads, arrowheads and other objects, took ancient man to remote islands and volcanic outcroppings. The control of an obsidian source could mean tremendous power and wealth, as seen on the volcanic island group of Manu'a in Samoa, whose chief was supposedly the "king" of all the Polynesian Islands. Hawai'i and Rapa Nui (Easter Island) — both extremely remote islands—also had valuable sources of obsidian. The area around Mexico City-Teotihuacan-Tenochtitlan is also rich in obsidian and the Aztecs, as did earlier cultures, centered their civilization in the vicinity of these important obsidian sources. Obsidian mines are also located in South America, and can be near volcanic areas in Ecuador, Peru, Bolivia and Chile among other places.

Metals were desired too, and many metals, such as gold and copper, can be easy to obtain. Both gold and copper can be found in large veins of pure ore and often nuggets can easily be hammered into flat sheets. Gold is too soft to be used for tools or weapons, though copper can be used to make such items. Alloys of

metals are always harder than the original and once ancient man had figured out how to create intense heat with smelters and furnaces, the melting and refining of various ores into alloys such as bronze and electrum (plus other silver, gold or copper alloys of literally any mixture) was widely practiced. The ores could be turned into some molten metal product and then poured into a stone mold that cast it as in ingot, double axe head, spearhead or other metallic object.

The search for precious stones is largely a matter outside the scope in this book, although quartz crystal objects and the search for diamonds, emeralds, rubies and sapphires have their own fascination and lore. The quest for turquoise, lapis lazuli and jade are equally fascinating and it is the quest for jade that is of particular interest to those of us in our quest for ancient technology and the development of drills, saws, chisels and other stonecutting equipment, commonly used in both mining and stonemasonry.

Other valuable and rare commodities are the purple dyes derived from certain species of shellfish, sometimes known as murex, and certain spices like cloves and cinnamon. The search for and knowledge of the extraction of purple dyes in both the Mediterranean and Central America is discussed in *Myths of Pre-Columbian America*[16] by Donald Mackenzie, which was first published in 1923. Mackenzie discusses the curious royal purple dye that was deep in color, long-lasting and very expensive. Says Mackenzie:

> Murex purple, which had a religious value, was used in the New World as in the Old. It appears to have been first introduced in Crete as far back as 1600 BC. On Leuke, an island off the southeast coast and at the ancient seaport of Palaikastro, Professor Bosanquet discovered a bank of crushed murex shell associated with Kamares pottery. The Phoenicians of Tyre and Sidon adopted the industry and “Tyrian purple” became famous. Other dyeing centers were established. The purple of Laconia in the Gulf of Corinth was greatly esteemed. Purple-yielding shells were searched for far and wide in the western Mediterranean. Tarentum, the modern Otranto, became an important dyeing town. Bede, “the father of English history,” tells that on the British coasts were found, not only mussels which yielded pearls of all colors, including red, purple, violet, green and white, but also cockles, “of which the scarlet dye is made: a most beautiful color which never fades with the heat of the sun or the washing of the rain, but the older it is the more beautiful it becomes.” “Purpura mounds” have been discovered in Ireland...

> The Phoenicians are believed to have obtained from the British Isles a dark shade of shell purple called “black purple.”
>
> Shells yielding purple were searched for and found and used, as far East as China and Japan. An interesting fact about the shells discovered in the mounds of Omori, Japan, is that many of them had a portion of the body-whorl broken away “as if for the purpose of more conveniently extracting the animal.” The Caithness broch shells [Scotland] were broken in like manner.
>
> Traces of the purple industry have been found, as has been said, in the New World. Mrs. Zelia Nuttall has published a paper entitled “A Curious Survival in Mexico of the use of the Purpura Shell-fish for Dyeing.”[16]

Mackenzie says that Nuttal and others point out that the purpura, or murex, shells have been taken from Inca graves in northern Chile as well as from middens in North America. The purple dye industry in both Europe and the Americas was closely associated with the search for pearls and the use of the conchshell trumpet which needs a special hole cut into the back of it to work properly. It is strongly believed that the purple dye industry originally began in the Eastern Mediterranean—as well as the Red Sea—and that “an intimate relationship existed between this art and skill in weaving, as well as the mining, working, and trafficking in metals, such as gold, silver and copper. In the New World the purple industry is associated with similar pursuits.”

According to Mackenzie, these sailors and purple dye makers, the same people who went to remote islands and bays around the world “to work gold and copper, and incidentally to erect megalithic tombs and temples, were also searching for pearls and making use of shell trumpets.” Mackenzie goes on to quote Professor G. Elliot Smith, a noted expert on the murex industry at the time:

> There are reasons for believing that all these special uses of shells were spread abroad along with the complex mixture of arts, customs and beliefs associated with the building of megalithic monuments.
>
> The earliest use of the conch-shell trumpet was in the Minoan worship in Crete. Thence it spread far and wide, until it came to play a part in the religious services, Christian and Jewish, Brahman and Buddhist, Shinto and Shamanistic, in widely different parts of the world—in the Mediterranean, in India, in Central Asia, in

Indonesia and Japan, in Oceania and America.[16]

So, evidence suggests that at various periods during ancient times there were some serious quests to remote locations around the globe in search of murex shells, pearls, gold, copper and other metals. We could add to that list the search for spices as well as hallucinogenic drugs such as dried mushrooms or cactus parts that contain active psychedelic ingredients. Many of these rare substances were thought to prolong life or even give immortality, much like ginseng might be seen today.

It would seem that the early purple dye industry could be much older than 1600 BC, and that it did not necessarily originate in Crete. It may have come originally from ancient India or Indonesia, or even from some now drowned land such as the legendary Atlantis. The first extraction of purple dye is lost to the mists of time although it was used by the Romans, Greeks and Phoenicians. In Greek myth, its discovery is credited to Hercules—or rather his dog, whose mouth turned purple after chewing on some snails or cockles. But we can suppose that some of the ancient seafarers who came to islands in the Pacific and Atlantic Oceans, as well as to the Americas, were wearing this regal purple cloth. Their quest was for those special things: gold, copper, silver, tin and other metals. In the Andes Mountains they would find them.

These ancient voyagers crossing the Atlantic and Pacific Oceans would have carried fishing gear with them as well as animals. One of the animals that was typically carried by ancient seafarers was the chicken, and because chickens have traceable DNA, their origins can be scientifically determined. Indeed, a recent study, published in July of 2012 has done just that. The London *Telegraph* reported on August 12, 2012 that all chickens, including ones in Chile, the Pacific Islands and the Dominican Republic (in the Caribbean) were all descended from chickens in Southeast Asia.

A carved conch shell found at Chavin.

Said the article, which quotes from the Australian Broadcasting Corporation (ABC):

> The team of researchers from the University of New England (Armidale, Australia) studied the ancient DNA–known as mitochondrial DNA–preserved within 48 archaeological chicken bones and found the same DNA signature present in bones from Europe, Thailand, the Pacific, Chile, the Dominican Republic and Spanish colonial sites in Florida.
>
> Project researcher Dr Alison Storey says chickens have been domesticated for at least 5400 years and it has been difficult to determine the ancient origin and dispersal of chickens because of the way successive civilisations carried the domesticated poultry with them wherever they went.
>
> "What we found is that one of the sequences in the different chicken bones was very similar over a wide geographic area. This tells us that the chickens that we found in archaeological sites all over the world shared an ancient ancestor who was domesticated somewhere in southeast Asia a long time ago," Dr Storey told the ABC.
>
> "All of our domestic chickens are descended from a few hens that I like to think of as the 'great, great grandmothers' of the chicken world," she says.
>
> The report, published in the journal *PLos ONE*, has implications

> for the world of human movement as much as it does for the DNA of poultry. The report says: “Understanding when chickens were transported out of domestication centres and the directions in which they were moved provides information about prehistoric migration, trade routes, and cross cultural diffusion.”

So, according to the researchers at the University of New England in Armidale, Australia, chickens were transported across the Pacific from Southeast Asia to Chile (and other places) possibly as far back 3400 BC in a “cultural diffusion” that provides information about “prehistoric migration and trade routes.” That is, of ancient cultures coming out of Southeast Asia and probably crossing the Pacific to South America, leaving chickens on islands along the way. In other words, these chickens from Southeast Asia did not fly or walk to South America on their own—they were brought by humans.

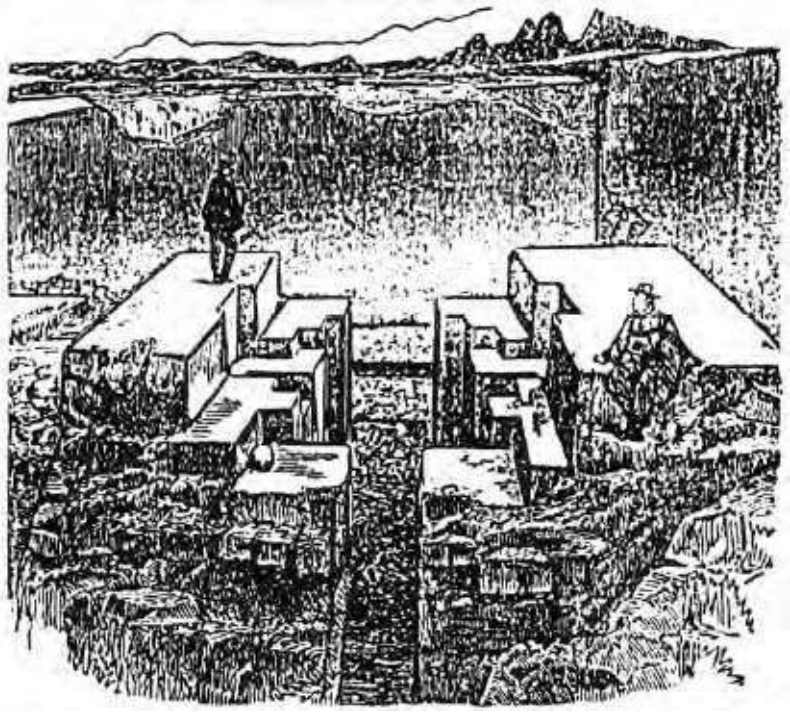
And, indeed, such a proclamation has far-reaching implications for the astonishing megalithic ruins in South America, Easter Island, Tahiti and the Marquesas Islands, Tonga and many other places in the Pacific or along the Pacific Rim. The possibility that Easter Island remained an isolated dot in the ocean with no contact with South America would seem ever more remote—to the horror of isolationists—given that ancient chicken bones and their DNA in Chile have been scientifically traced to Southeast Asia.

Silver-gold snuff pin found at Chavin.

Since this book is about South America, we will focus on that aspect of ancient diffusion and the technology that came with it. What else was brought to South America from Southeast Asia besides chickens? Were iron tools, mining and refining technologies brought to South America from across the Pacific? Were ancient customs, such as tattooing and the elongation of the lower ear also brought across the ocean—even the odd custom of elongating the skulls of infants to create "coneheads"? Canadian anthropologist Brien Foerster and I discuss this subject in our book, *The Enigma of Cranial Deformation.*[61]

But for now, let us look at the astonishing high technology that was used at the megalithic sites in the mineral-rich Andes Mountains—wherever it came from.

The Great Wall of Peru which extends for hundreds of miles in northern Peru.



A drawing from Squier's 1877 book on Peru of an unknown site near Chavin that appears to be machine-cut by power tools, and may have held machinery as well.

Two elongated skulls from Paracas, Peru, now at the Ica Archeology Museum.

Mathew Stirling (center) and colleagues at one of the colossal Olmec heads at San Lorenzo, 1946. Its eye had appeared in an eroded trail, leading to its discovery.

Stirling clears debris from the Tres Zapotes Colossal Olmec Head 1, Mexico, 1939.

CHAPTER TWO

THE ENGIMA OF ANCIENT TECHNOLOGY

The point of philosophy is to start with something
so simple as not to seem worth stating,
and to end with something so paradoxical
that no one will believe it.
— Bertrand Russell, *The Philosophy of Logical Atomism*

As we acquire knowledge,
things do not become more comprehensible,
but more mysterious.
— Will Durant

The way we imagine ancient civilizations and the technology that they possessed very much influences the way our historians and archeologists make determinations about the way these ancient people lived, where they came from and what they believed. If we believe, as we were taught, that ancient people were primitive, did not know about simple technology such as the wheel, were afraid of the ocean, and had no desire to trade or explore their surrounding lands, then we will make assumptions about their civilization and the reasons they built their central cities or temple complexes framed by this belief.

We can assume that they built things because a “cult” leader or priests and kings told them to—perhaps a tomb for royalty or a pyramid where priests could worship the rising sun. Or maybe they did things, like the Chinese or Mayans, because they were obsessed with searching for jade or gold or other valuable

metals, spices or herbs.

If we assume that ancient man did not get into boats and cross large bodies of water then we can promote an isolationist view of ancient cultures. Distances are exaggerated and nearby cultures are in effect very far away. No contact would be made between South America and Central America, as such contact probably would have had to occur with boats, and these people didn't like to use boats or go on long trading voyages—or at least we assume. The Mayans, even though they had large ocean-going canoes, would not have moved along the Gulf of Mexico to areas like Texas, Louisiana, Mississippi or Florida. They certainly would not have gone straight across the Gulf of Mexico to Florida or Cuba, as they would have been out of sight of land.

Yet, it is acknowledged that a similar body of water—the Mediterranean—was a veritable highway to the ancient peoples of Europe, the Middle East and northern Africa. In fact, the vibrancy of these many ancient civilizations surrounding the Mediterranean would not probably have occurred without the sea being used for maritime traffic. I am talking about such great civilizations as those of Egypt, Phoenicia, Crete, Greece, Rome, Carthage and others.

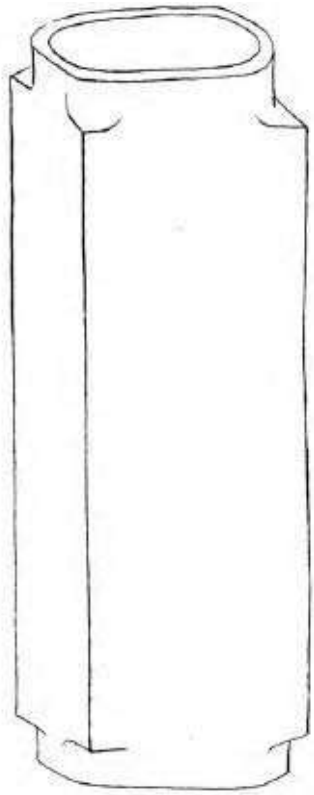
Similarly, the mysterious Polynesians (we don't know where they came from) were able to settle remote islands that are thousands of miles from other specs of land—islands like Hawaii, Easter Island, New Zealand and the Marquesas. These people were said to have Stone Age cultures with primitive technology, yet their seafaring abilities were apparently more sophisticated than those of "high tech" cultures such as the ones dominating ancient China, India, Sumeria or Egypt.

So, with regard to civilizations in South America (and North America) we have a paradox: how is it that civilizations here could build gigantic structures of cyclopean granite blocks? How could they cut and move these massive slabs, often weighing 100 tons or more? Why would they even want to build in such a way that seems so incredibly difficult? Yet, they supposedly had no knowledge of the wheel, no need to build ships and explore their own coastlines, no knowledge of iron tools or machines or any kind. Or did they? Could our whole concept of these people and their abilities, including contact with other cultures, be completely wrong? That is basically what this book is all about.

Ancient Machine Drills and the Jade Cong of China

In order to understand some of the incredible stone machining at places like Tiwanaku, Puma Punku, Ollantaytambo, Cuzco and other places, we need to look at smaller objects that also show evidence of being machined in some way:

a hole drilled through very hard basalt, granite, quartz crystal or jade; an object that is engraved or carved that is made out of quartz crystal, jade or basalt; jars, vases and vessels that are cut out of basalt, granite or other very hard stone; and weird objects with no known function such as the strange jade *cong* tubes and the similarly mysterious *bi* discs, also made of various types of jade.



A jade cong without embellishments.

On one of my recent trips to London with Jennifer, we visited the British Museum, one of the finest and most interesting museums in the world. It is a museum with many fascinating exhibits, some of them permanent and some of them temporary. I was particularly interested on this visit to look for objects that might be proof of advanced ancient technology including machining techniques and power tools. Objects like crystal skulls are always interesting because of the difficulty in working with such a hard substance as quartz crystal, and we snapped a few pictures of the fine skull on display at the museum. I was particularly pleased when I discovered that the museum was having a special exhibit on Chinese jade *cong* and discs.

While I was familiar with the jade discs—known in Chinese as *bi* (pronounced “bee”)—I was not familiar with the *cong* (which is both singular and plural), and what I discovered amazed me.

The plaque at the entrance to the exhibit had three brief paragraphs. It said:

> *Cong* (square tubes with a circular hole) are among the most impressive yet enigmatic of all ancient Chinese jades. Their function and meaning are completely unknown. The main motif used to decorate them was a simplified monster face pattern, which fitted around the square-sectioned corners. The circles of the eyes on the tall *cong* shown here are only occasionally visible, but the face can be seen more clearly on the shorter bracelet form of *cong*. The tallest *cong* is one of the three tallest in the world.
>
> Discs were among the common burial objects in ancient China, but large, heavy rounded discs of jade, known as *bi*, were probably introduced by the Liangzhu culture. The most finely carved discs of the best stone were often placed at the centre of the body in the tomb. Other *bi* were laid out along the length of the body and underneath it. *Cong* and *bi* are sometimes, but not always, found together.
>
> The carving of objects such as these demanded an enormous amount of jade and skilled labour that only a sophisticated society would have been able to support.

So, these strange objects had a “function and meaning” that was “completely unknown.” Archeologists and scholars apparently had no idea what these objects were for, and could not even make a guess. I found this to be very curious. Even more interesting, these *cong* had to be made by a sophisticated drilling process that is virtually identical to the drilling process we use today, and this was in 3400-2250 BC, about 5,000 years ago!

A jade cong on display at the British Museum. Was it made with power tools

A jade cong on display at the British Museum. Was it made with power tools

One of the plaques at the exhibit contained a diagram of the proposed drilling process, and said: “Some holes may have been cut using a stone gouge with the jade held on a rotating turntable. This method is thought to have been employed at a Bronze Age workshop in northern Vietnam.”

According to another plaque with an x-ray of one of the very tall *cong:*

> A hole was made from each end using a combination of large and small drills.
>
> The arc-shaped mark was cut with a thick grinding wheel.
>
> This drill, like the others, was tubular.
>
> The two holes meet halfway along the length of the *cong* but they were misaligned, barely joining.
>
> The grinding wheel that made the arc-shaped marks would have been mounted on a rotary lathe.

What were these mysterious jade objects? Why were they so important to the ancient Chinese? Were they made with power tools? The cong were drilled from both ends—the example we saw was somewhat misaligned, but drilled none the less—so some sort of powered tool was used on the very hard jade. But the purpose of the cong is still a mystery. Were they themselves part of some high tech ancient object that we cannot fathom today? These were some of the questions that came to my mind after seeing the exhibit. I was determined to find out more about these mysterious jade objects that were so revered that only the emperor and highest nobles could afford them.

I turned to the free online encyclopedia, Wikipedia, for some simple definitions. Said Wikipedia about the *bi* discs:

> The *bi* is a form of circular jade artifact from ancient China. The earliest *bi* were produced in the Neolithic period, particularly by the Liangzhu culture (3400-2250 BC). Later examples date mainly from the Shang, Zhou and Han dynasties. They were also made in glass.
>
> A *bi* is a flat jade disc with a circular hole in the centre. Neolithic *bi* are undecorated, while those of later periods of China, like the Zhou dynasty, bear increasingly ornate surface carving (particularly in a hexagonal pattern) whose motifs represented deities associated with the sky (four directions) as well as standing for qualities and powers the wearer wanted to invoke or embody.

As laboriously crafted objects, they testify to the concentration of power and resources in the hands of a small elite.

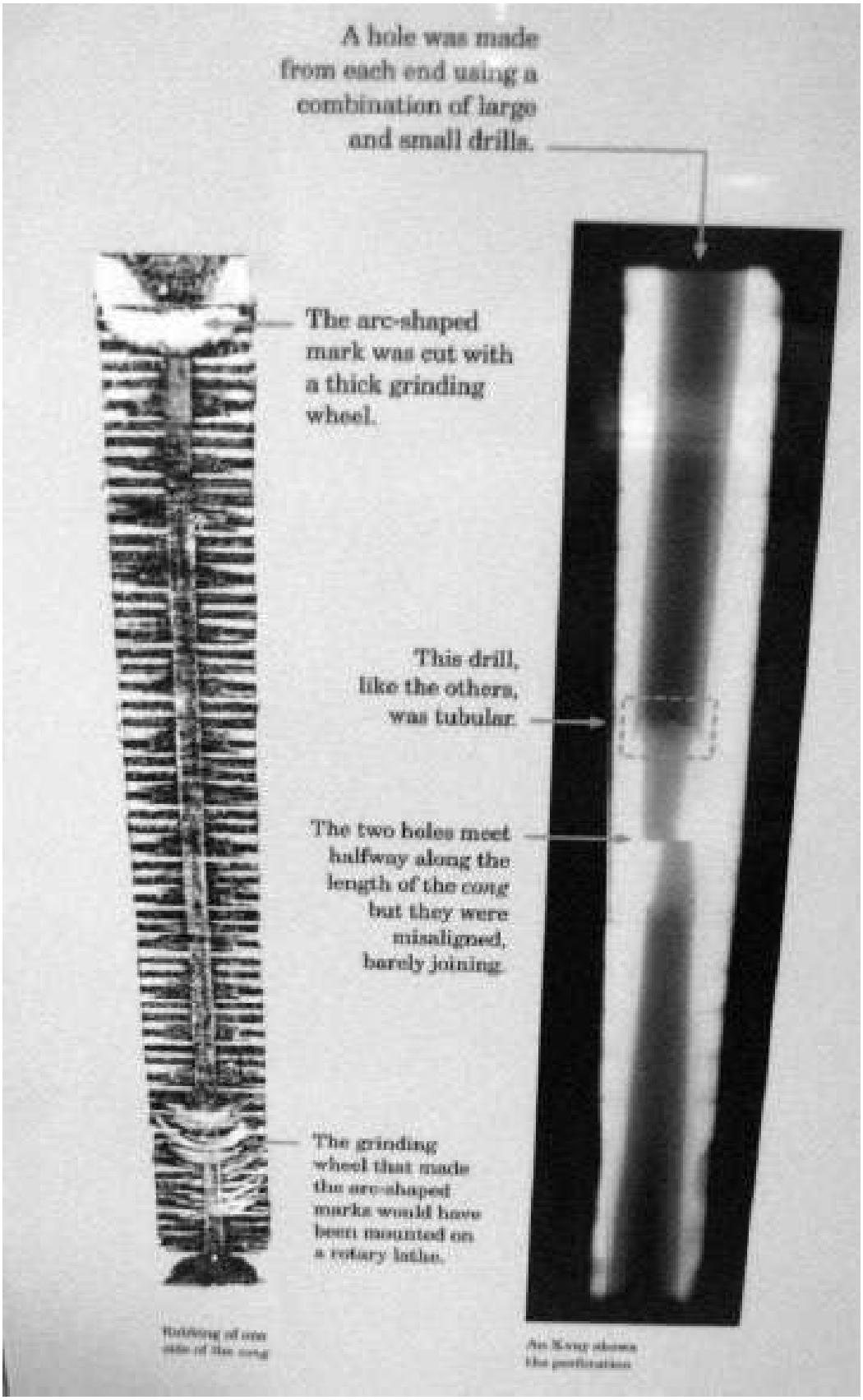
...These objects were handled by shamans who were the religious leaders of Liangzhu society and the transmitters of cosmological knowledge.

About the function of the *bi* discs, Wikipedia says:

The original function and significance of the *bi* are unknown, as the Neolithic cultures have left no written history. From these earliest times they were buried with the dead, as a sky symbol, accompanying the dead into the after world or "sky," with the *cong* which connected the body with the earth. They were placed ceremonially on the body in the grave of persons of high social status. *Bi* are sometimes found near the stomach and chest in neolithic burials.

Jade, like *bi* disks, has been used throughout Chinese history to indicate an individual of moral quality, and has also served as an important symbol of rank. They were used in worship and ceremony —as ceremonial items they symbolized the ranks of emperor, king, duke, marquis, viscount, and baron with four different *kweis* and two different *bi* disks.

In war during the Zhou dynasty period (1046-256 BC), *bi* disks belonging to the leaders of the defeated forces were handed over to the victor as a sign of submission.


A hole was made from each end using a combination of large and small drills.
The arc-shaped mark was cut with a thick grinding wheel.
This drill, like the others, was tubular.
The two holes meet halfway along the length of the *cong* but they were misaligned, barely joining.
The grinding wheel that made the arc-shaped marks would have been mounted on a rotary lathe.
Finishing of one side of the cong
An X-ray shows the perforation

A sign at the *cong* exhibit at the British Museum showing the x-ray of a very long *cong* and how it was drilled from both ends.

Says Wikipedia about the mysterious *cong:*

> *A cong* is a form of jade artifact from ancient China. The earliest *cong* were produced by the Liangzhu culture (3400-2250 BC); later examples date mainly from the Shang and Zhou dynasties.
>
> In form, a *cong* is a tube with a circular inner section and squarish outer section. The outer surface is divided vertically or horizontally such that the whole defines a hollow cylinder embedded in a partial rectangular block. Proportions vary— a *cong* may be squat or taller than it is wide. The outer faces are sometimes decorated with masklike faces, which may be related to the *taotie* designs found on later bronze vessels.
>
> Although generally considered to be a ritual object of some sort, the original function and meaning of the *cong* are unknown. Later writings speak of the *cong* as symbolizing the earth, while the *bi* represents the heavens.

The references to the *cong* having a monster face on it similar to the *taotie* naturally had me looking up what a *taotie* was. Wikipedia says:

> The *Taotie* is a motif commonly found on ritual bronze vessels from the Shang and Zhou Dynasties. The design typically consists of a zoomorphic mask, described as being frontal, bilaterally symmetrical, with a pair of raised eyes and typically no lower jaw area. Some argue that the design can be traced back to Neolithic jades of the ancient Yangtze River Liangzhu culture.
>
> Scholars have long been perplexed over the meaning (if any) of this theriomorphic [animal] design, and there is still no commonly held single answer. The hypotheses range from Robert Bagley's belief that the design is a result of the casting process, and rather than having an iconographic meaning was the artistic expression of the artists who held the technological know-how to cast bronze, to theories that it depicts ancient face masks that may have once been worn by either shamans or the god-kings who were the link between humankind and their deceased ancestors.
>
> ...Most scholars favor an interpretation that supports the idea that

the faces have meaning in a religious or ceremonial context, as the objects they appear on are almost always associated with such events or roles. As one scholar writes “art styles always carry some social references.” It is interesting that even Shang divination inscriptions shed no light on the meaning of the taotie.

It is not known what word the Shang and Zhou used to call the design on their bronze vessels; as Sarah Allan notes, there is no particular reason to assume that the term taotie was known during the Shang. In fact, the first known occurrence of this word is in Zuo Zhuan, where it is used to refer to one of the four evil creatures of the world: a greedy and gluttonous son of the Jinyun clan, who lived during the time of the legendary Yellow Emperor. The word *taotie* itself was glossed by a Zuo Zhuan commentator as “glutton.”

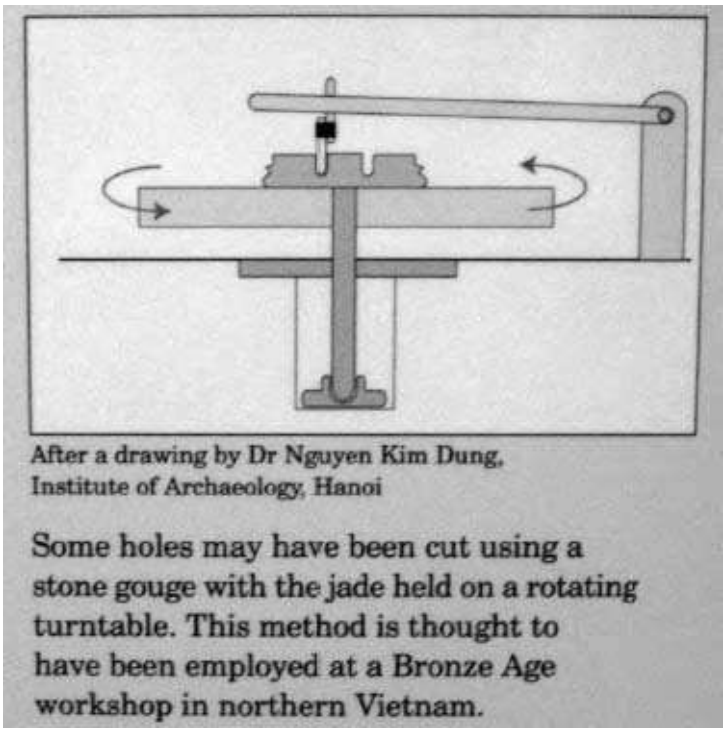
A Chinese bronze vessel with the *Taotie*-monster face design.

The next obvious thing to check out was the mysterious Liangzhu culture of ancient China. These ancient people seemed to have some pretty advanced technology for their time and they obviously valued jade as some highly desirable stone for their *cong* and *bi.* Says Wikipedia:

The Liangzhu culture was the last Neolithic jade culture in the Yangtze River Delta of China. Its area of influence extended from around Lake Tai north to Nanjing and the Chang Jiang, east to Shanghai and the sea, and south to Hangzhou. The culture was highly stratified, as jade, silk, ivory and lacquer artifacts were found exclusively in elite burials, while pottery was more commonly found in the burial plots of poorer individuals. The typical site at Liangzhu was discovered in Yuhang County, Zhejiang and initially

excavated by Shi Xingeng in 1936.

The culture possessed advanced agriculture, including irrigation, paddy rice cultivation and aquaculture. Houses were often constructed with stilts on rivers or shorelines.

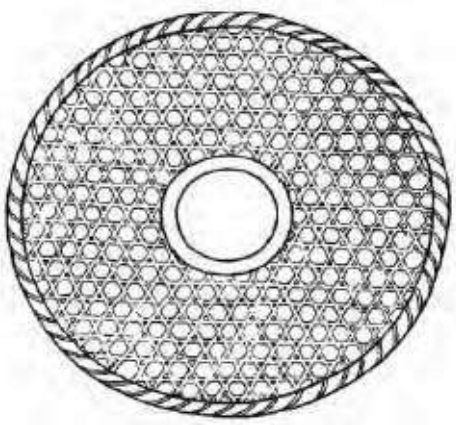

After a drawing by Dr Nguyen Kim Dung,
Institute of Archaeology, Hanoi
Some holes may have been cut using a stone gouge with the jade held on a rotating turntable. This method is thought to have been employed at a Bronze Age workshop in northern Vietnam.

A sign at the *cong* exhibit at the British Museum showing a gouge tool.

The jade from this culture is characterized by finely worked large ritual jades, commonly incised with the *taotie* motif. The most exemplary artifacts from the culture were its *cong* (cylinders). The largest *cong* discovered weighed 3.5 kg. *Bi* (discs) and *Yue* axes (ceremonial axes) were also found. Jade pendants were also found, designed with engraved representations of small birds, turtles and fish. Many Liangzhu jade artifacts had a white milky bonelike aspect due to its tremolite rock origin and influence of water-based fluids at the burial sites, although jade made from actinolite and serpentine were also commonly found.

A neolithic altar from the Liangzhu culture, excavated at Yaoshan in Zhejiang, demonstrates that religious structures were elaborate and made of carefully positioned piles of stones and rock walls: this indicates that religion was of considerable importance.

So, we have an ancient Chinese culture that was highly religious and placed a tremendous importance on jade artifacts that seem to have been machined on a lathe and drilled with tubular drills, probably of some sort of hard metal like bronze. Some of the *bi* are also so carefully inscribed that it would seem that some sort of power tool was being used on the extremely hard jade.

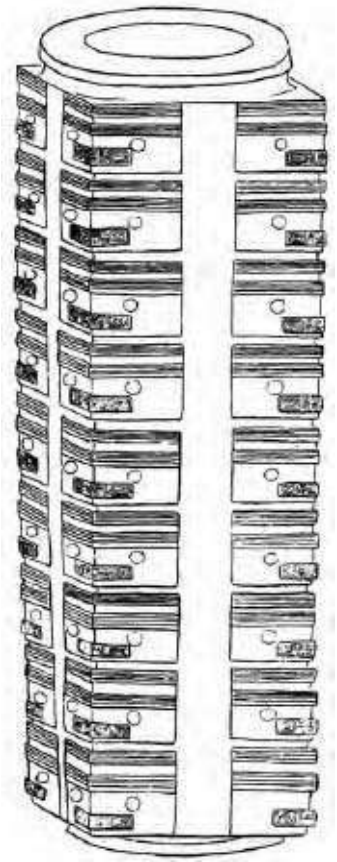


A jade bi disk with engraved basketry design.

In the case of the *cong*, they have been apparently machined in a number of different ways: First a block of jade was cut in the rough shape of the unfinished *cong.* This would be a very large piece of jade for the largest of the known *cong.* Then this piece of jade was squared and a hole drilled through it (from both ends on the longer *cong).* Finally, the *taotie* motif was carved into the outer shell of the *cong*, including the swirling-sweeping face of the "monster."

Looking carefully at the *cong* and the *taotie* motif, which is also found on the famous bronze cauldrons and drums of the Liangzhu and Shang cultures, it would seem that this sweeping design of swirls and circles is somehow associated with the lathes and other power tools that the Liangzhu machinists were using.

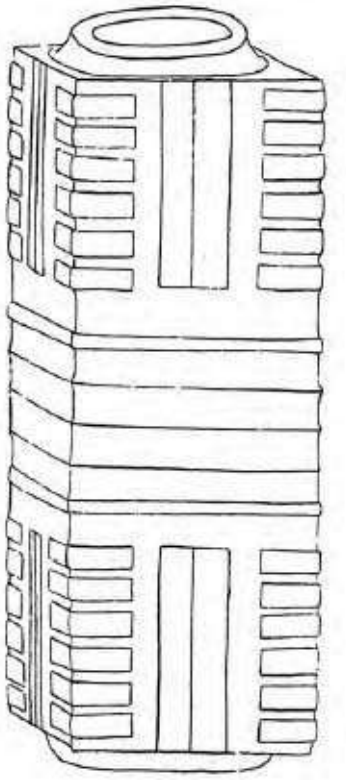
Because these valuable and important artifacts were made on a spinning lathe (and using drills) with artificial pressure applied to them to cut into the jade, the swirls and circles and nature designs that appear on the outside seem to be consistent with the markings that such a machine would make. Essentially, these are the kind of markings that the tools were capable of making, and so they were incorporated into the designs.



A jade *cong* with the monster face.

The big question seems to be whether the drills and lathes were powered by electricity or merely by a “potter’s wheel” type of device. With a potter’s wheel, a foot pedal turns a belt that then powers a spinning wheel to create the lathe or drill. A more complicated version of such a machine could include someone on a bicycle-device with a pedal that would also turn a belt, which would rotate a wheel allowing for “powered” drills and other tools.

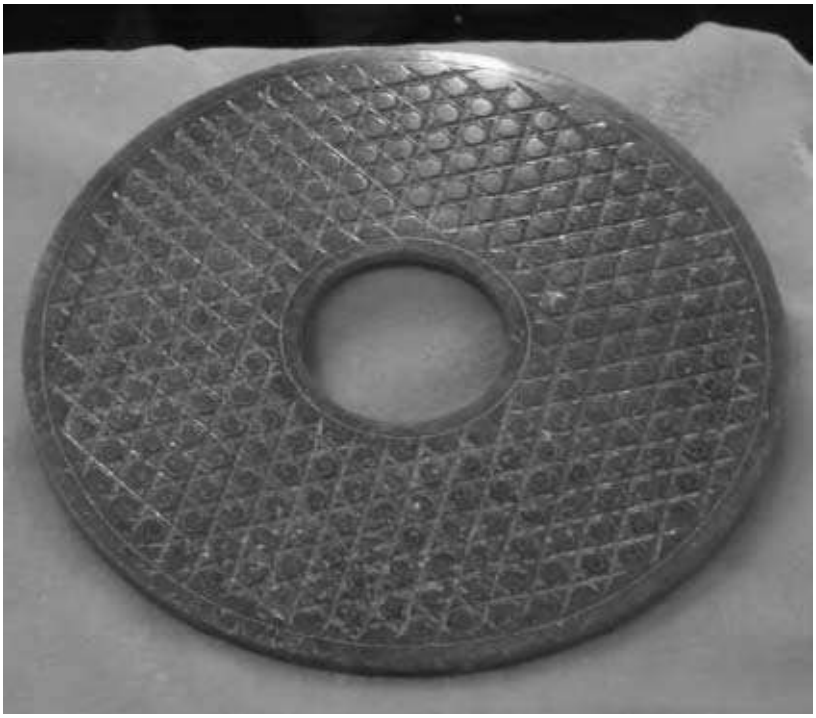
But, readers of my books and those of Christopher Dunn and others will be aware that there is evidence of large, powered circular saws that were used to cut blocks of granite and basalt; some sort of electricity must have been used to power motors that could turn such large saws. So, were electric motors used to power the lathes and drills used to create the mysterious *cong*? Perhaps one of the reasons that the Chinese of dynasties after the Liangzhu culture worshiped these durable objects is that they were virtually impossible to make without power tools—which these later cultures did not have!



A jade cong with notches.

Is it possible the *cong* were some sort of insulator in an electronic device—hence the difficult hollow section in the middle of the *cong*? What this electronic device might have been is completely unknown. I could speculate that it was some plasma (electrified gas) cutting device or flamethrower, or other high-energy tool. This jade outer casing—now called a *cong*—is virtually indestructible and has lasted for thousands of years as a sacred treasure to successive Chinese aristocrats.

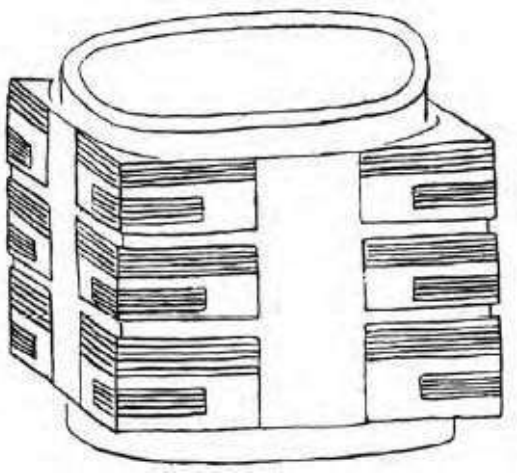
In this sense, one wonders if the *cong* and *bi* were made by a culture that was earlier than the Liangzhu culture. The reason I would suggest this is that any culture that was burying these items as funeral objects had probably already lost the meaning of their true purpose—whatever that was. At some point, I surmise, these objects had a practical purpose that is lost today, and apparently lost even to the Liangzhu culture. Similarly, even *cong* and *bi* that are said to have been manufactured by the Shang or Zhou dynasties may have been made many hundreds of years earlier and were inherited sacred objects rather than items made by these cultures.



A jade bi disk with engraved basketry design.

The *bi* disks, some of them quite large, appear to have been thicker jade wheels that were also drilled in the center like a *cong* and then sliced by a large power saw, thereby creating three or four thin jade disks from one thick one. Some of these jade disks were then ornately inscribed with geometric patterns, again by what seems to be a power tool.

In his 1912 book *Jade: A Study in Chinese Archaeology and Religion*, jade scholar Berthold Laufer discusses *cong* and *bi* disks, though he calls the disks *pi*, and the *cong* he calls a jade tube "ta t'sung." Lauf er has a number of photos and diagrams of the jade tubes and *bi* and, like other scholars, is completely baffled as to what they were for. He concludes that the jade tubes and sliced disks were ritual objects of some kind, symbolizing heaven and earth in some lost ancient ritual. He does comment curiously on the suggestion of a Dr. Bushell that these jade tubes, with square outer sides, were possible wheel-naves — the central block or hub of a wheel. Laufer discounts this theory stating that jade was too important, rare and valuable to be used in this way, even if it were for the emperor. He does admit, though, that they do look like wheel naves.[8]



A *cong* with straight marks like a power tool would make.

Laufer gives a good description of several *cong* in his book, including one that was curiously infused with mercury:

> Both are hollow cylinders, round inside and square in cut outside, with two short protecting round necks at both ends; the former plain, without any ornamentation, of a dark-colored or dark-green jade with black veins all over, and as he says, saturated with mercury; the other piece of a uniformly black jade is decorated along the four corners with nine separate rectangular fields in relief carvings. The ornamentation in each field is the same; two bands consisting of five lines each, two knobs below, and a smaller band filled with spirals and groups of five strokes alternately horizontal and vertical. The prominent corner ornaments are called with the special name *tsu.* The protruding ring-shaped necks receive the name *she,* a word which is used also in the jade tablets called *chang* to denote the triangular point at the upper end.[8]

It is curious that one of the *cong* is saturated with mercury. This strange metal is an element, a liquid and a conductor which was said to be used in the ancient aircraft called vimanas in the Hindu epics. The ancient emperor of China, Chi Huang Ti, who built the Great Wall and ordered most of the libraries in China destroyed, is said to be buried in an enormous tomb 30 km from Xian, the location of the famous terra cotta army. His court historian described the tomb as having extravagantly rich models of earthly delights, including bronze mountains and rivers of mercury that actually flowed to a mercury-filled sea. Archeologists are afraid to excavate the tomb because of the complex conditions they expect to encounter, but probes inot the tomb have shown highly elevated

mercury levels. If the original purpose of the *cong* was as the hub of some sort of mechanical device, would it have become saturated in mercury if that was part of the machine? It would seem so. Perhaps this is the case with this mercury infused cong.

A jade *bi* disk infused with mercury.

While the *bi* and the *cong* are fascinating and mysterious for Laufer, he says nothing about how they would have been made or how difficult it would be to make them. It took decades for the British Museum to finally study the *cong* that they had and conclude that some sort of drilling process was used. And what about the *cong* being some sort of nave or hub used in machinery? Because of its naturally smooth soapy surface and square outer hub it could lock into a large piece of metal such as a large metal blade. Could the *cong* have been hubs for some sort of machinery like giant circular saws—saws used to cut jade or other stone in thin disks or make other fine cuts? It could have been the hub for a spinning device that powered a drill, perhaps a quartz-crystal or diamond tipped drill.

Jade discs—*bi*—were historically known as the symbol of the Chinese emperor. When there was any dispute in the royal palace as to who was in charge, the emperor would hold up his *bi* for everyone to see, and his authority as king was restored. Yet, like the *cong*, the original meaning of the *bi* and the power that it conferred to the ruler is lost to history. We simply do not know the function and use of these ancient items; however we can still speculate as to how they were created.

Other Mysterious Jade Items the Baffle the "Experts"

Jade artifacts are discovered occasionally around the world and usually cause at least some degree of excitement. Jade sources are rare and often mysterious,

and jade has been imbued with mystical powers by many societies, such as the power to protect an individual wearing a jade object.

In an article entitled “Origin of Ancient Jade Tool Baffles Scientists” released from the University of Otagao in New Zealand on February 2, 2012, author Gary C. Daniels said:

> An international team of archaeologists and geologists has found an extremely unusual example of jade in the Southwest Pacific, thousands of miles away from the nearest known geological source. The small green artifact is about 3,300 years old and has a chemical composition that is unlike any other described jade. Found during an archaeological excavation on a coral island in Papua New Guinea, the rock is thought to have been used as a wood gouge by the people living there.

But where did it come from? The researchers, from the American Museum of Natural History, the University of Otago (New Zealand) and the University of Papua New Guinea, address this question in a special issue of the *European Journal of Mineralogy* on jadeitite, the rock that defines one type of jade. Says the journal:

> Jade is a general term for two extremely tough rocks— Jadeite jade (jadeitite) and nephrite jade, each composed almost entirely from a single mineral. Throughout history, these rocks have been made into tools and ornamental gems that were worn, traded, and treasured. Many nephrite jade sources exist, but the prominent locations are China, New Zealand, Russia, and Canada. Far rarer is jadeite jade, which was used by people living in what is now Central America and Mexico over a span of two millennia prior to the arrival of European colonists. “In the Pacific, jadeite jade as ancient as this artifact is only known from Japan and its usage in Korea,” said George Harlow, a curator in the Museum’s Department of Earth and Planetary Sciences and the lead guest editor for the special journal issue. “It’s never been described in the archaeological record of New Guinea.”
>
> The artifact was recovered from Emirau Island in the Bismark Archipelago. It was likely dropped from a stilt house into the water below and covered by years of beach sand.
>
> After preliminary analysis at Academia Sinica (Taiwan) and the University of Otago, the gouge was sent to the Museum, where it

was studied with x-ray microdiffraction, a technique that bounces a small beam of x-rays off the specimen to elucidate the atomic structure of the material, and, consequently, the types of minerals it contains. Harlow also used the Museum's electron microprobe to determine the chemical composition of the minerals in the jadeite.

"When we first looked at this artifact, it was very clear that it didn't match much of anything that anyone knew about jadeite jade," Harlow said.

The chemical composition of the jadeite in the rock is substantially different from that of other jadeite samples. Jadeite, a mineral of sodium, aluminum, silicon and oxygen in its pure form, is usually mixed compositionally with small amounts of calcium, magnesium, and iron, representative of the mineral diopside and, to a lesser extent, hedenbergite. The jadeite in the newly discovered jade, however, has almost no diopside content and, instead, contains iron without added calcium, representing the mineral aegirine, containing sodium, iron, silicon, and oxygen.

In addition and equally unusual, the artifact contains minerals rich in niobium and yttrium, which, according to Harlow, have never been previously observed in a jadeite. "It makes very little sense based on how we know these rocks form, and certainly not in the concentration that we see," he says.

But the even bigger mystery is where this unusual rock came from. Only one jadeite source has been reported with similar chemical properties—a site in Baja California Sur, Mexico. If this were the gouge's original home, though, it would have had to have been transported across the Pacific, a highly improbable scenario for the Neolithic people of the time.

"This jadeite tool points toward prehistoric contacts with the north coast of New Guinea," said Glenn Summerhayes, an archaeologist at the University of Otago and a co-author on the paper. "The users of this jadeite gouge were part of the movement of Austronesian-speaking people we call Lapita, who appeared in the western Pacific almost instantaneously around 3,300 years ago, then quickly spread across the Pacific out to Samoa in a couple hundred years, and from there formed the ancestral population of the people we know as Polynesians. Where they came from beforehand has always been a matter of debate, so any find linking

> these early Lapita settlements with the west is important in modeling the nature of their beginning."

So here we see how jade was very important to ancient man and how it is looked at carefully, whenever it is found, by modern day archeologists. Here, since modern archeologists cannot believe that there was some sort of trans-Pacific contact that would bring the jade from Baja California to New Guinea, they are baffled. Modern discoveries and academic dogma just don't fit together sometimes. But at Summerhayes admits that the find points toward prehistoric contact, and says it will be important to explore any link between the Lapita people and America.

The source of jade is often a mystery, with the jade mine at Quirigua in Guatemala being one of the few sources of jade in the Americas. Other sources of jade in North America are said to be Nevada and Jade Cove in California. South America is not, as far as I can ascertain, a major source of jade. There are many other valuable minerals, but jade is rarely found in South America. The few jade objects that have been found on that continent were discovered in Colombia and Ecuador. Turquoise and lapis lazuli objects have been found in South America, including Peru, but never much jade.

The distribution of jade axes in the Caribbean was major archeological news in 2006 with the announcement that Canadian archeologists on Antigua had traced jade axe blades found on the island to the Quirigua jade mines in Guatemala. In an article written by Charles Petit for National Geographic News on June 12, 2006 (reporting on findings published in the April issue of the journal *Canadian Mineralogist),* it was stated that the discovery of ancient jade axes on the island of Antigua in the eastern Caribbean was going to "shake up old notions of the New World before Columbus." And why would that be? Well, academic dogma says that ancient American cultures like the Mayans and Olmecs did not travel in boats to islands. But the jade must have originated at the Mayan city of Quiriqua. Says the article:

> A discovery of ancient jade could shake up old notions of the New World before Columbus. Scientists say they have traced 1,500-year-old axe blades found in the eastern Caribbean to ancient jade mines in Central America 1,800 miles (2,900 kilometers) away, New York's American Museum of Natural History announced late last month.
>
> The blades were excavated in the late 1990s by a Canadian archaeologist on the island of Antigua in the West Indies. But the

> jade used to make the blades almost certainly came from Maya mines in distant Guatemala, says mineralogist George Harlow of the American Museum of Natural History.
>
> The find may call into question a once dominant archaeological picture of the pre-Columbian Caribbean. Previous theories held that a few big or budding civilizations existed on the mainland of Central America, with only isolated, village-based societies on islands in the Caribbean Sea.
>
> The new analysis gives weight to a competing view, which suggests that organized, long-distance trade networks were based primarily on those islands. “There has been a closed mind-set that these [ancient] people out here were primitive, but we are learning there was a whole world out here we don’t yet fully know about,” said Reg Murphy, an archaeologist at the Museum of Antigua and Barbuda in St. John’s, Antigua. Murphy collaborated with Harlow on the research. Murphy says it’s likely that complex societies not only existed on the islands but also communicated with other cultures in South America along the Orinoco and Amazon Rivers.
>
> “Those rivers [in South America] were highways of exchange that extended around the coast all the way to Guatemala,” he said.

Probably what is curious to most readers of the article was that it was a *surprise* that there was contact between Caribbean Islands and mainland cultures like the Maya or Olmecs. I mean, the experts—the scholars who write the textbooks and teach in the universities—didn’t think that Mayans or Caribbean Islanders would have had the ability or desire to make long trading voyages? What kind of myopic vision of ancient American cultures are they teaching? They never would have imagined that some Mayan artifact (or one from South America for that matter) would end up on a Caribbean island?

Well, according to the National Geographic News Service and the American Museum of Natural History, things are starting to change. If the “experts” can now belatedly admit that there was trade with islands in the Caribbean, they might find it in their hearts to examine evidence of transoceanic trade, trade that could have come across both the Atlantic and Pacific Oceans, just as it does today.

Sacred Fires and Ancient Electricity

One night in Lima, while strolling along the ocean cliffs in Miraflores, I

looked up at the stars in a cloudless sky. We would be flying to La Paz, in Bolivia the next morning. Overhead, a modern-day airship flew past, perhaps a Peruvian Air Force plane, buzzing south toward the Nazca Plain. As the sound of the jet faded off into the distance, I wondered how much longer this airship, and all the other airships of South America and the world, would continue to exist. With the world seemingly on the brink of nuclear, economic and geological disaster, our civilization too could fall. What would the possible survivors think of legends of our very real airships and the remains of our runways? Would there be legends and myths of an advanced technological world that was now gone?

Why not a civilization thousands of years ago that was advanced—but not to the degree that we are today in the 21st century? Sure, they didn't have television the way we have it today or all the commercials. It was not a consumer society with different brands and advertising like we have, nor was it worldwide in the sense that our cultures are today with the Internet and cell phones. But, they had capital cities, factories, airports, electricity, giant temples and some sort of "State Religion." Maybe they were started by extraterrestrials. Maybe they just rose up, as civilization and science are wont to do, over a cycle of human history going back over a hundred thousand years.

But, in order to have flight and other advanced technology, they would have to have had electricity as well as hard metals and machines. But people in the ancient past didn't know about electricity—or did they? In my book *Technology of the Gods*[4] I attempt to show that ancient man did indeed know about electricity and used it in various ways, including as "sacred lights" in temples that would impress religious pilgrims.

Famous artifacts like the Ark of the Covenant from the Biblical book of *Exodus* were seemingly electrified devices, in this case a box or chest that would electrocute any untrained person who touched the sacred object. This Biblical construct is well known, and the subject of the popular Indiana Jones film *Raiders of the Lost Ark.*

The Russian-Australian author Andrew Tomas, who was well versed in classical texts of both the east and west, has an entire chapter entitled "Electricity in the Remote Past" in *We Are Not the First.*[47] This chapter has a long list of classical authors who have made many statements in their works testifying to the reality of ever-burning lamps in antiquity:

•A beautiful golden lamp was said to burn for a year at a time in the temple of Minerva, and was described by the second-century historian Pausanias.

•Saint Augustine (AD 354-430) wrote of an ever-burning lamp which neither

wind nor rain could extinguish.

•The Jesuit Kircher, in his *Oedipus Aegyptiacus* (Rome, 1652), tells of lighted lamps found in the subterranean vaults of Memphis. Here we have a reference to electric lights in Egypt, still functioning, incredibly, for thousands of years.

•Also in Egypt, pilgrims reported seeing flashes of light in the eyes of Isis in her temples throughout Egypt—were they made with an electrical apparatus?[4]

•When the sepulcher of Pallas, son of Evander, immortalized by Virgil in his *Aeneid,* was opened near Rome in 1401, the interior of the tomb was found to be illuminated by a perpetual lantern that had apparently been alight for hundreds of years.

•Numa Pompilius, the second king of Rome, had a perpetual light shining in the dome of his temple.

•Plutarch wrote of a lamp that burned at the entrance of a temple to Jupiter-Ammon, and its priests claimed that it had remained alight for centuries.

•An ever-burning lamp was found at Anti och during the reign of Justinian of Byzantium (sixth century AD). An inscription indicated that it must have been burning for more than five hundred years.

Tomas also mentions a sarcophagus containing the body of a young woman of patrician stock that was found in a mausoleum on the Via Apia near Rome in April 1485. When the sealed mausoleum that had housed the sarcophagus was opened, a lighted lamp amazed the men who broke in. It must have been burning for 1,500 years! When the dark ointment preserving the body from decomposition had been removed, the girl looked lifelike with her red lips, dark hair, and shapely figure. It was exhibited in Rome and seen by 20,000 people.

The court historian who described Emperor Ti Huang Chi’s elaborate tomb said that lamps were filled with whale oil to burn for eternity. It will be interesting to find out if they are still lit when Chinese archeologists finally enter the tomb.

Other mysterious lights and “glowing stones” have been reported in lost cities around the world by early travelers, missionaries and explorers. Tibet is said to have such glowing stones and lanterns mounted on pillars in towers. Tomas relates that Father Evariste-Regis Huc (1813-1860), who traveled extensively in Asia in the 19th century, left a description of ever-burning lamps he had seen, while the Russian-American Central Asian explorer Nicholas Roerich reported that the legendary Buddhist secret city of Shambala was lit by a glowing jewel in a tower.

Atlantis and everlasting stone lamps featured in the beliefs of the famous

British explorer Colonel Percy Fawcett, who vanished in the Brazilian jungles in 1924 while searching for a lost city which he believed was lit by glowing stones on pillars. Tomas quotes a letter sent by Fawcett to British Atlantis authority Lewis Spence about the lost city in the jungle and what the natives had told him about the glowing stones. “These people have a source of illumination which is strange to us—in fact, they are the remnant of a civilization which has gone and which has retained old knowledge.”[4, 47]

Colonel Fawcett never reported finding his city, but Tomas (quoting from Harold Wilkins’ book *Secret Cities of Old South America*[26]) relates that in 1601 the Spanish author Barco Centenera recorded the discovery of a similar-sounding place. Centenera wrote of the discovery of the lost city of Gran Moxo, located near the source of the Paraguay River in the Mato Grosso. In the center of the island city he says “on the summit of a 20 foot pillar was a great moon which illuminated all the lake, dispelling darkness.”[4,26,47]

Archeologists are all familiar with the famous “Baghdad Battery” which was one of many in use more than 2,000 years ago in Iraq. Dr. Wilhelm Koenig, a German archaeologist employed by the Iraq Museum in Baghdad before WWII, discovered one in 1938 while conducting a dig at Khujut Rabu’a, not far south of Baghdad. The Museum had begun scientific excavations, and in the digging turned up a peculiar object that—to Koenig—looked very much like a present-day dry-cell.[4]

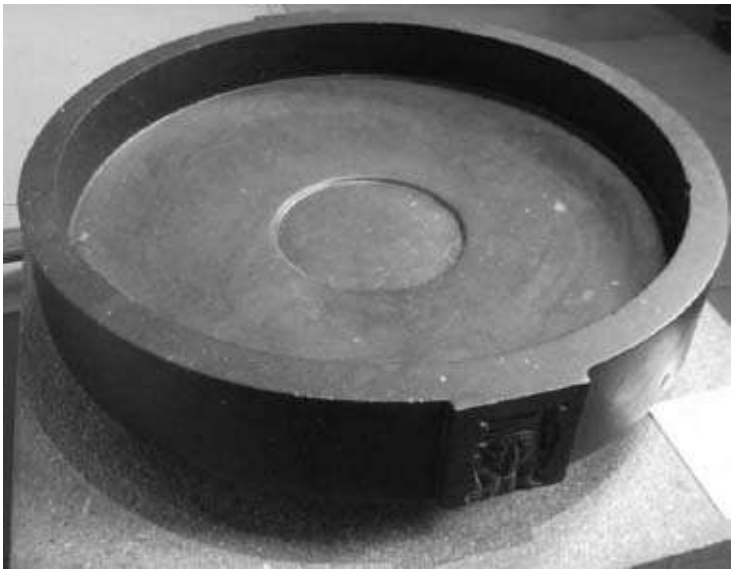
Other batteries identical to the one that Koenig had found were discovered, and it became clear that the batteries were hooked up into a series of battery-jars, and the electricity that came out of them was used in electroplating copper or bronze objects with gold in the identical manner that electroplating is done today.

These simple but effective electrical devices were known in ancient times. Were there more sophisticated electrical devices once used but now lost to the mists of time and history? Suffice it to say that we should keep in mind ancient electricity, transoceanic trading and exploration in our quest for answers to ancient technology and megalith building in Peru and Bolivia.

Jade *bi* and *cong* on display at the British Museum with jade axes on the right.

A solid basalt ark or box from Egypt now at the British Museum. After it was made, probably with power tools, it was then drilled by someone stealing or defacing the object. These drill holes would also seem to have been done by a power tool.

A close-up of the drill hole in the solid basalt ark or box from Egypt now at the British Museum. This drill hole would seem to have been done by a power tool.



A solid basalt bowl from Egypt now at the British Museum. This is the type of object that would be very difficult to acheive without a power tool of some type.

Top: A 1902 photo of the megalithic city of My Son in central Vietnam. *Left and Above:* The stone blocks with their unusual and complicated articulation and keystone cuts are very similar to those found at Tiwanaku and Puma Punku.

CHAPTER THREE

ANCIENT TECHNOLOGY AT TIWANAKU AND PUMA PUNKU

Any sufficiently advanced technology is
indistinguishable from magic.
—Arthur C. Clarke

The plane shuddered and shook as the winds of the high Andes caused a rough landing at the La Paz International Airport. People clapped as we landed and cruised up to the terminal. We were glad to be in La Paz and were soon collecting our luggage and heading for the Ritz Hotel where we could rest and organize our things for our research at Puma Punku and Tiwanaku.

I handed out room keys and we took the elevator to the special suites reserved for us. I was pleased to see that Jennifer and I had a refrigerator and bar, a roomy sitting area and a nice view over the lower part of La Paz. In the evening the group gathered in our suite. Chris Dunn brought some of his measuring equipment to the room and we had a look at his precision tools, maps and reports. Chris was looking for a certain degree of precision and regularity in the well-preserved stones we were going to examine. Jennifer opened a bottle of wine and a few beers and we all had a toast.

"To the lost cities of Bolivia!" I proposed.

"Here, here," came the reply.

Indeed, the strange mysteries of Tiwanaku and Puma Punku were only a few

hours away. Tomorrow, we would visit the ancient ruins at the sites, separated by only about one kilometer, and start our examination. I had looked at them many times before. Would I see something new this time? I was hoping to do so, with the help of Chris's keen eye for traces of advanced stone machining techniques.

We made the journey in a chartered minibus the next day. The site is about a 90-minute drive northwest from La Paz and we would return there several times over the coming days. I was excited to see Tiwanaku and Puma Punku again, as it had been a few years since I had visited. I had been there four years before with Chris, when we made the documentary about ancient technology in the Andes. Chris had examined the stone cuts at Puma Punku and the evidence that sophisticated power tools had been used at the site and was impressed enough to want to do more research. This time he brought an expanded assortment of tools in order to examine the granite blocks more closely.

We pulled up to the main building with the ticket booth and main museum. I jumped out and bought tickets for everyone and then we walked toward the main pyramid and temple site of Tiwanaku to the southeast of the main building. The tracks of the old railway line ran just in front of the gated entrance to the site. Some souvenir stands with statues, hats, tapestries and drinks stood along the tracks in front of the fence. I thought about how most of the visitors at the beginning of the 20th century had come here by train, right up to the 1960s. Now the tracks were virtually abandoned, vestiges of a technology that was useful in its time but was now little used, at least for passenger service.

The Amazing Pre-Inca Ruins of Tiwanaku

The massive ruins of Tiwanaku are situated in a remote, desolate area of the Altiplano. These ruins overlook barren hills, in stark contrast to the stunning setting of Machu Picchu. The cataclysmic theorists point out that it is unlikely that such a fantastic city would be built at such a desolate location and high altitude.

The central part of the city is the restored temple of Kalasasaya. Megalithic blocks make up the steps, walls, and arches around the temple. At the turn of the century, Boilvian engineers broke up the stones and carried away all the smaller blocks to be used as ballast on a railway. What remains today of Tiwanaku is what could not be carted away for use in other structures—only the biggest blocks of stone remain and these ruins are still very remarkable! In 1864, E. George Squier visited Tiwanaku and was quite impressed by the ruins; he called them the Baalbek of the New World, referring to the ruins of Baalbek in

Lebanon, which contain some of the largest and most astounding megaliths to be found anywhere in the world.

Old photo of a half-buried Gate of the Sun, date unknown.

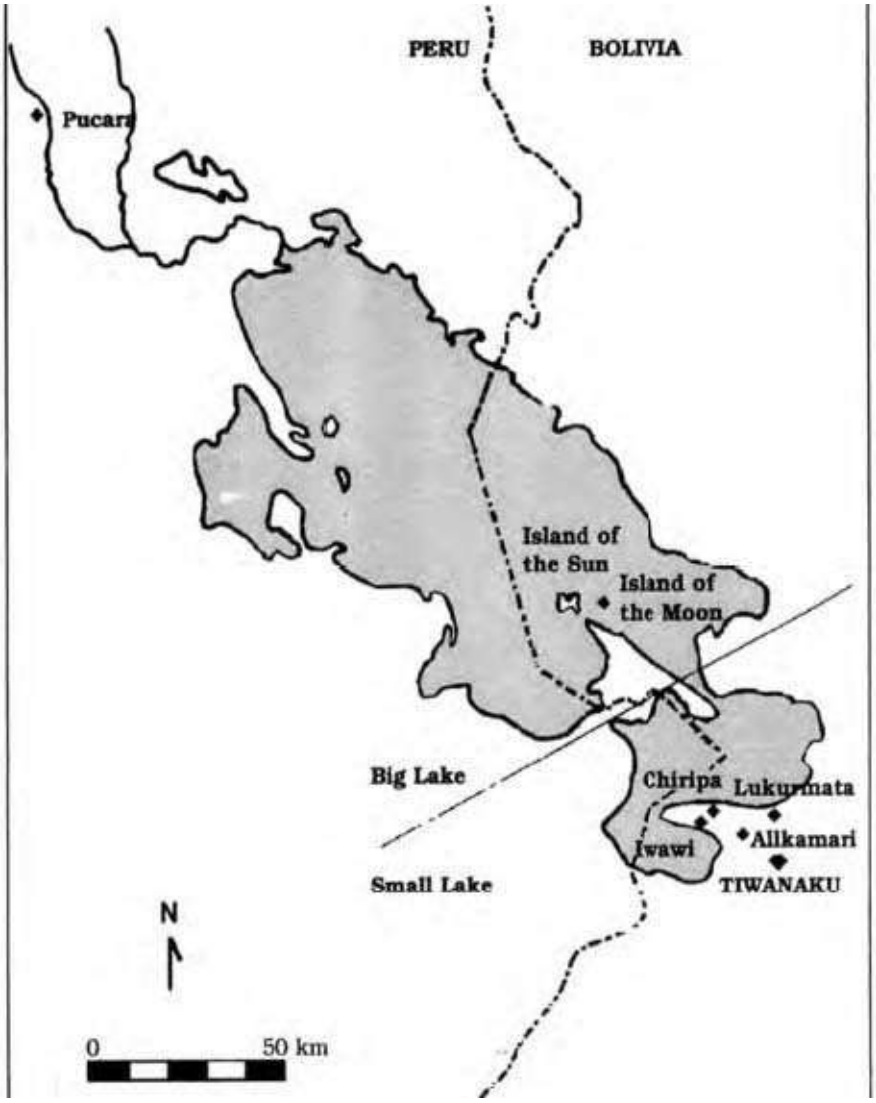
In the center of Tiwanaku is a stone arch cut from a solid chunk of granite weighing about twelve tons, now cracked by what must have been a pretty good earthquake. On the upper portion of this arch is a series of carvings, believed to be a calendar. In the center a figure, holding a staff on each side, appears to be weeping with tears coming from his eyes. He is known as “the Weeping God.” This massive stone gate, called the Gate of the Sun, was apparently moved to where it is today by some earlier culture after the city was destroyed. The gate is actually from the ruins of Puma Punku that are about a half mile to the north of the main part of Tiwanaku.

The Kalasasaya temple at Tiwanaku in a photo by Max Uhle, c. 1892.

The Kalasasaya temple at Tiwanaku in an old photo, c. 1896.

When the Spaniards first arrived, they were told by the natives that this city had been found in ruins by the Incas. Cieza de Leon, one of the first chroniclers of South America, visited the site in 1540 when much of the stone still remained. He reported two colossal stone figures, with long robes reaching to the ground and ornamental caps on their heads.

Cieza de Leon wrote, “...the natives told me ...that all these marvels sprang from the ground in a single night... There are not stones in any of the hills beyond.” The Spaniards generally believed that these monuments “...were more the work of demons than of men.” A similar legend told at the time was that, “Tiwanaku was built in a single night, after the flood, by unknown giants. But they disregarded a prophecy of the coming of the sun and were annihilated by its rays, and their palaces were reduced to ashes...”


PERU
BOLIVIA
Pucara
Island of the Sun
Island of the Moon
Big Lake
Small Lake
Chiripa
Lukurmata
Iwawi
Allkamari
TIWANAKU
N
0
50 km

A trench exposing the sunken temple dug by Posnansky, c. 1932.

In the 16th century, missionary Diego de Alcobaso wrote:

> I saw a vast hall carved on its roof to represent thatch. There were the waters of a lake which washed the walls of a splendid court in this city of the dead, and, standing in its fine court, in the shallows of the water, on the platform of a superb colonnade were many fine statues of men and women. So real they were that they seemed to be alive. Some had goblets and upraised drinking cups. Others sat, or reclined, as in life. Some walked in the stream flowing by the ancient walls. Women, carved in stone, dangled babies in their laps or bore them on their backs. In a thousand natural postures, people stood or reclined.

One of the statues wore a beard, probably the famous “Kon Tiki” statue now at the center of the sunken temple at Tiwanaku. South American Indians are beardless and do not have to shave. The Kon Tiki statue, however, has a thick

beard and mustache.

In fact, the “Tiki” part of Kon Tiki refers to the well-known “tiki” figures of Tahiti and Polynesia. Tiki carving is a time-honored skill, with techniques for carving the very formulaic features passed down from generation to generation. One of the features of tiki statues is the positioning of the hands: one over the heart and one over the stomach, and this is featured throughout Polynesia on statues and greenstone or shell carvings often worn as medallions on the chest for good luck. Even today the seafarers of Polynesia often wear such a tiki medallion for good luck and protection. The Kon Tiki statue at Tiwanaku holds his hands in this manner! While a connection between ancient Polynesia and Tiwanaku might easily be inferred from this, as the Norwegian archeologist Thor Heyerdahl did in the early 1950s, most academic “experts” maintain that this is simply a coincidence. They cannot, however, explain why the Kon Tiki statue at Tiwanaku has a full beard and mustache while American Indians do not have facial hair of any kind. Just one of those mysteries that cannot be explained at Tiwanaku—and there are many.

Old photo of the Bennett Monolith being excavated, 1932.

The Bennett Monolith front and back.

Arthur Posnansky posing next to the statue with the curved kris blade, c. 1938.

Some of the other statues at Tiwanaku are much larger than the Kon Tiki statue. Two larger specimens can be seen in the nearby Temple of the Stones Standing Up. These massive statues of andesite granite weigh many tons, wear turbans on their heads, have curiously decorated clothes that look like fish scales, and hold strange objects in their hands that may be knives, or jade scepters of authority, or even some potentially high tech object for cutting and carving stone. One of the statues, known as El Frail (The Friar), is clearly holding a knife with a swerving S-shaped blade that is very common in Indonesia even today. Such an S-shaped blade is known as a “kris” in Indonesia and some of the older knives, held by families for generations, are believed to have special power and importance. It is curious that one of the Tiwanaku statues is holding a “kris.”

Old photo of the Bennett Monolith and another head on display, c.1957.

Many of the statues are wearing turbans, such as the Ponce Monolith statue nearby. Also, some statues are in the curious “quizuo” position, being on their knees with their hands placed on their thighs. In some “quizuo” statues the head is held slightly forward, as if the subject is offering himself and his head in a position of supplication to a ruler, chief or higher power. Statues in the quizuo position have been discovered on Easter Island, in Mexico (particularly Olmec statues), ancient China, Indonesia, and the Indus Valley where they were made by a civilization known as the Harappan. Statues in the quizuo position are also found in ancient Egypt and in every case, the meaning of this position is clear: it is a person who is on his knees in an act of supplication to a “lord” of some sort —a chief or king who has the power of life or death over this person. For a detailed study of the quizuo posture and its worldwide implications, see my book

The Mystery of the Olmecs.[6]

There must have been quite a few statues at Tiwanaku and Puma Punku in ancient times. Early on, during the amateur excavation of Tiwanaku (little was done at Puma Punku until the last few decades), many smaller statues and granite building blocks were removed. Some of these statues were displayed at the Open Air Museum in La Paz while others were situated around the main square of the small village of Tiwanaku just east of the archeological site. Many of the statues were possibly destroyed by early Catholic priests—as was known to have happened in Cuzco where statues also existed—and others disappeared into private collections in Bolivia and elsewhere. Today, the monolithic statues of bizarre, bug-eyed men stare vacantly over the desolate ruins of Tiwanaku.

Old photo ol one ol the statues at Tiwanaku, French Expedition, 1903.

Probably the most impressive of all the monolithic statues is the Bennett Monolith which was discovered in 1932 in a dig in the so-called Semi-Subterranean Temple by the American archeologist Wendell Clark Bennett. It is made of sandstone and is a very impressive 7.3 meters in height (21 feet) and weighs an estimated 20 tons. As far as we know, it is the largest of any statues I discovered in Bolivia or Peru. The statue is of a man who is depicted in a similar manner as the Ponce Monolith: he wears a turban and headband, and a tunic, belt and skirt (or pants). He holds two curious objects in his hands which are said to be a “rape tablet” and a “kero vessel,” both of which are thought to be associated with the ingestion of hallucinogenic drugs. His skirt or pants seem to have a fish scale pattern, and his belt has crabs engraved on it. He seems to be some sort of “fish-man” and it is generally assumed by archeologists that he is a priest or ruler represented in an “idealized” manner.

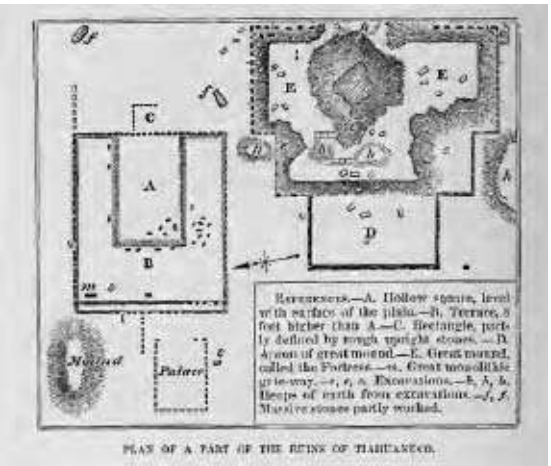
The Kalasasaya main gate in an old photo, c.1899

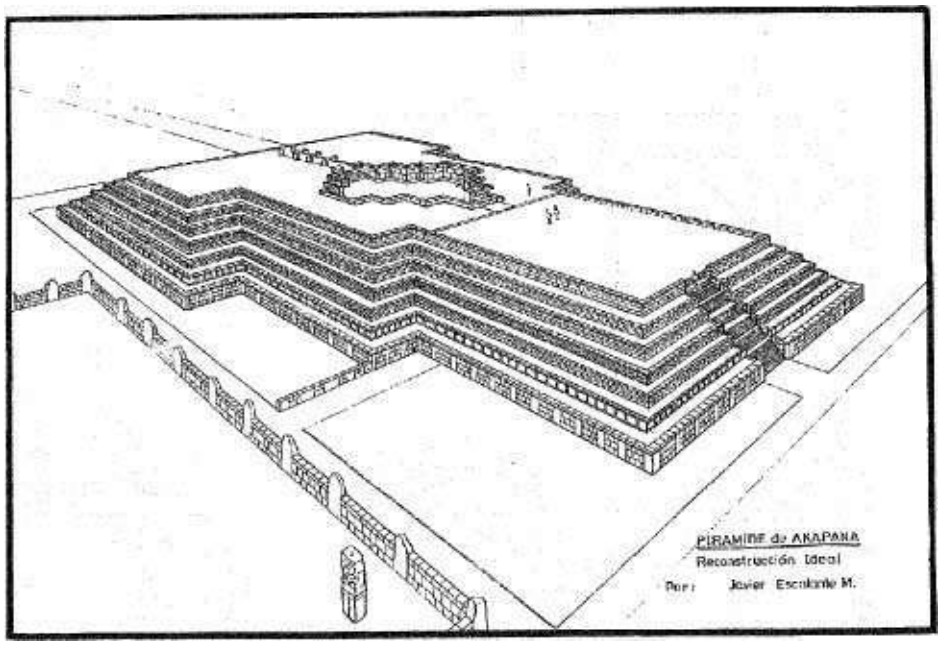
The Kalasasaya main gate in an old photo, c.1899.

Old photo of the Gate of the Sun.

The Bennett Monolith remained facedown in the Semi-Subterranean Temple for many years and Arthur Posnansky spent some time cleaning the back of it and making drawings of the intricate decorations. Eventually it was moved to La Paz and displayed in the Open Air Museum in Tejada Serrano Square for many years. Here it was exposed to the city's rain and smog until it was moved to the Lithic Museum at the Tiwanaku site where it sits today inside one of the rooms and can be viewed by tourists, although no photography is allowed for some unknown reason.

On this visit I quickly took my small digital camera out of my pocket when the guard wasn't looking and snapped a photo of the Bennett Monolith. I suppose I got a mild thrill knowing that I was breaking the rules with . my quick snapshot, and it seemed like a rule that was meant to be broken. Photography, even flash photography, would not harm the sandstone statue, it seemed to me. Was there some mysterious reason that the Bolivian archeological authority didn't want photos of the monolith taken, perhaps because it would facilitate carefull examination of the finely carved features? Maybe the Bennett Monolith still had some secrets to divulge.





A reconstruction of the Akapana Pyramid with its Andean Cross Lake on top.

The Akapana Pyramid

I ducked out of the museum, passing the guard with a quick glance and smile, and walked out into the parking area that surrounds the two museum buildings and ticket office. I crossed the street and the train tracks to the souvenir shops run by some enterprising women from the nearby village of Tiwanaku. I bought a soft drink and a small sandstone model of the Bennett Monolith.

I then showed my ticket at the gate to the main archeological site. Chris Dunn and Jennifer were waiting for me and the three of us walked along the gravel pathway to the Akapana Pyramid. This stone pyramid, now covered with tons of soil, is slowly being excavated with large stones in corners and a few

other elements exposed. It once held a man-made lake at the top. This lake, actually a pond or reservoir, was in the shape of the Andean Cross, which is similar to the Swiss Cross. Water was brought to the top of the pyramid by some sort of hydraulic system, probably using what are known as “ram pumps” to move water uphill and fill the reservoir.

Old photo of the backside of the Gate of the Sun, French Expedition, 1903.

A ram pump need not have any mechanical parts, but can be an engineering method of channeling water coming downhill into a pipe or channel where it is then forced by its own velocity to go uphill for a short distance and fill a reservoir. The water in this reservoir could then be used in other channels and locks to go downhill in an easily controlled manner and perhaps power fountains, washbasins, toilets and other facilities that would need water. Throughout India, Nepal and Southeast Asia there are still many public bathing areas that were designed in this manner.

The three of us walked up to the top of the Akapana Pyramid and looked at some curious granite blocks that had been exposed by recent archeological excavations at the site. They were part of a finely cut and polished granite doorway that was smashed and broken. Originally it must have been a huge solid stone doorway that was part of a massive wall of granite that may have originally surrounded the top of the pyramid and the artificial reservoir.

Chris noticed that it had small drill holes in it, probably for attaching gold plates to the stone. Similar tiny holes in hard granite can be seen at Puma Punku as well, and they would be extremely difficult to make with primitive tools.

“Do you think that these holes were made by a power tool?”

I asked Chris as we looked at the broken monument.

“Well, that certainly could be the case,” he said in his typical conservative style.

Right then we noticed that there was an anomalous area on a corner of the stone. that was colored to look very similar to the surrounding stone.

Old photo of the Gate of the Sun.

“Look at this, it looks like there’s some strange concrete patch on this stone,” Chris said.

I scratched it with my finger and it was very hard. It was superbly bonded to the granite stone but was obviously some sort of wet stone, like concrete, that was placed on the corner of the original stone where it had been badly chipped. The whole patch of strange concrete was about three-inches wide and five-inches long.

“This is strange,” I said. “It seems like it is completely bonded to the stone and has granite in it. Is it that ‘liquid stone’ that the French engineer Davidovits says was used to build the pyramids?”

“Ah, yes, that theory,” said Chris. “Well maybe that is the case.”

“I mean, it looks like some super-bond concrete...” I said. “Could it be some modern archeological restoration? That seems impossible!”

We looked around at the broken stones surrounding us and observed that this slab of granite was sticking out of the ground at an angle, and had probably only been (partially) excavated in the last few decades. We saw some of the curious

concrete in another spot nearby, on a broken corner as well.

“It doesn’ t seem like some modern concrete patch, but something done a long time ago,” said Jennifer.

We all took some photos of the broken stone door and its curious patches of “granite-concrete” that was fused to the small sections of the door. What we were able to surmise from the evidence was that after the building was already standing and in use it apparently became damaged. It was then patched up with a super concrete that had the original stone as one of its components and could therefore make a “molecular bond” rather than a chemical bond, as normal cement does.

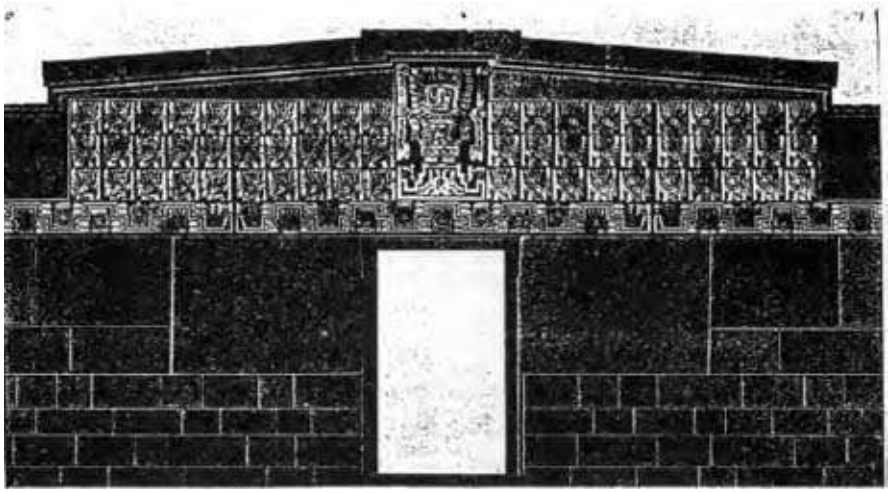
The Kalasasaya area in an old print, c. 1851.

Cement and concrete (which is cement with stones and gravel mixed in) were widely used in ancient times and both the Romans and Mayans used concrete extensively. Other civilizations such as the Chinese, Hindus and Olmecs used concrete, and theorists like Joseph Davidovits think that many of the blocks in the Giza Pyramids were poured into place just as we pour concrete sidewalks and buildings today. It is a different chemical bonding process, he claims, that makes his super-stone of the Giza Pyramids different from normal concrete, which is not as hard and durable as his “molecular bonding” mixture.

This concept of liquid stone is fascinating, and while gigantic granite blocks for doors or obelisks or whatever would still have to be quarried, cut, moved and placed with considerable effort, it is very possible that types of liquid stone, like concrete, were also used. Apparently we were looking at just such an example of ancient liquid stone—concrete of some type—on this granite block at Tiwanaku. It was either that, or the repair work had been done in the last 100 years, a thought that was just as baffling—who would haphazardly patch corners of ancient stones lying in ruins?

We continued to walk around the summit of the Akapana Pyramid and then down the other side towards the south. Here a huge archeological trench had exposed stone blocks fitted perfectly together with T-shaped keystone cuts made in the blocks (some with the metal clamps still in place) and part of a moat that

once surrounded the site. Puma Punku also had a moat surrounding it— or was it part of a port that connected to Lake Titicaca?



Conceptual drawing of a monolithic door fitted into a wall at Puma Punku.

We visited the far fence where lies a gigantic slab of granite that seems to be cut into a miniature map of part of Tiwanaku, complete with miniature stairways coming out of a semi-subterranean temple. Was this some guide-map, cut into stone, which may have shown pilgrims and workers the layout of the amazing megalithic complex?

As I walked to the Semi-Subterranean Temple, which contains the statue of Kon Tiki and has walls with numerous stone heads inserted among the stones, I wondered at the complexity of the site. The builders had planned a huge city in advance, complete with diverted rivers, water reservoirs on the top of pyramids and massive stone structures with gigantic solid-stone doors. It was a colossal super-city with gigantic walls, fountains, water flowing through a maze of gutters and channels—and the glitter of gold everywhere! The walls, I think, were literally covered in sheets of gold or with golden masks, sun disks, gold-woven tapestries or whatever. This might be what the tiny drill holes that can be seen at parts of Tiwanaku and Puma Punku were for—to attach sheets of gold or other gold items. The Sun Temple of Cuzco—the Qoricancha—was similarly said to have been adorned by sheets of gold and other golden items, a tradition that was likely to have continued up to the Spanish conquest since the Andes are rich in gold and other metals.

After viewing the Kon Tiki statue and examing the curious heads, said to contain facial features from all over the world—and even perhaps of extraterrestrials—we walked around the central raised plaza that archeologists call the Kalasasaya, or sometimes The Temple of the Stones Standing Up. It was

here that Posnansky made his astronomical calculations (more on this later).

As mentioned above, two huge statues are set in place here today, though it is doubtful that they are in their original positions. As one walks around this plaza, the main destination for tourists, one can get a small sense of the grandeur that was once Tiwanaku, though what kind of building might have originally stood here is elusive. Even the so-called Gate of the Sun is just a fragment of a wall that was brought here from somewhere else; it was not a gate for observing the sun, but a solid granite doorway that was once the entrance to a building that is now gone.

The Gigantic Doorways of Tiwanaku

Chris, Jennifer and I joined some other members of our group and walked up to the Gate of the Sun to take some photos and examine the fine carving in bas relief. I had seen it many times over the years, starting in 1985, and it continues to fascinate me to this day.

One of the most famous features of Tiwanaku are these gigantic doorways, most of which are lying broken on the ground. These megalithic doorways, including the Gate of the Sun and the Gate of the Moon, both of which are now standing upright, are often carved out of one solid piece of granite and were obviously parts of huge buildings. They were not meant to be solitary gateways in a plaza as they are now seen. These astonishing doors are not only perfectly articulated and cut by expert masons, but are exceedingly high as well.

Old print of the Gate of the Sun's backside.

They would seem to be created to allow an extremely tall person to enter the huge building—someone even eight or nine feet tall—or perhaps a person wearing an elaborate headdress as seen on the central figure of the Gate of the Sun. These high doorways, fitted into other granite slabs weighing many tons, would have formed part of a wall that allowed access into some inner area that

we can only guess at— perhaps to an area underground, or alternatively to steps leading to a second and third level, each having similar doorways cut out of solid granite slabs weighing many tons. These same solid granite doors— monolithic, or carved out of one gigantic slab of granite—are also found at the Puma Punku site. Some of the architectural drawings of what these buildings might have looked like are astonishing, especially the gigantic walls of Puma Punku to be discussed shortly. Indeed, these massive granite masterpieces of stonecutting are the most photographed ruins at the site, especially the Gate of the Sun.

Old print of an unknown gate, now lost.

The Gate of the Sun is a highly polished granite slab which, as previously mentioned, has intricate symbols carefully cut in low relief into the hard stone. There is a figure of “Viracocha, “ according to some, or simply a “supernatural figure” according to others, in the central area above the doorway. This Gateway God is wearing an elaborate headdress that appears to be made of feathers and serpents, plus dangling trophy heads and bursting rays with puma heads and circles (golden decorative balls?). The figure is facing forward and has large squarish eyes. He may be wearing a golden mask as some of the other statues appear to be doing.

The Gateway God is holding staffs in either hand that are crowned with condor heads or warrior emblems. These staffs might have been scepters of authority, surveying staffs, or possibly weapons such as atlatls or slings for hurling spears or stones. The man is wearing a tunic with a necklace and a “kilt.” Many archeologists see this figure as being very similar to those at Chavin, though they date Chavin as having been built 1,000 years earlier than Tiwanaku. The dating for Tiwanaku is controversial, as we shall see, and it may be much older than many traditional archeologists think.

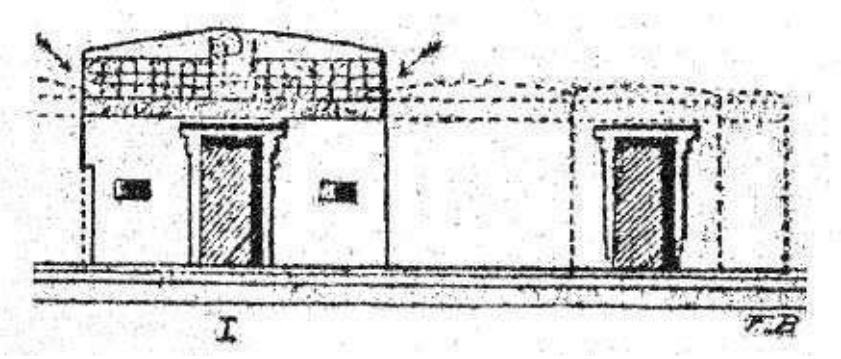
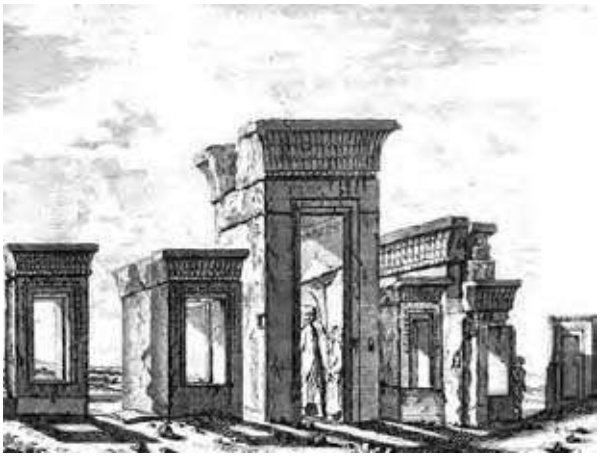


Diagram of how the monoUthic doors might have been used in walls.

The central supernatural person is surrounded by 30 small figures, who are winged birdmen running in profile. Each figure holds in its hands a condor staff or scepter (perhaps of jade?). The figures are cut into squares around the central figure, and are “running” toward him. One of the figures appears to be a man blowing a trumpet. Why are they winged birdmen? Does it mean that these incredible builders could actually fly? Did they have flying machines and giant saws to slice and cut gigantic granite blocks? Perhaps the birdmen were shamans who “flew” after ingesting hallucinogenic drugs. Perhaps they represent both. Either way, they are strange figures to say the least, and rarely speculated on by traditional archeologists.

The central figure with the squarish eyes also has tears on both cheeks that indicates that he is crying for something. What is he crying for—something lost? Perhaps a lost land— a lost mother country? Or are his tears symbolic of the important mining and refining industry that Tiwanaku and Puma Punku were a part of? Are the “tears of the sun” representative of the molten gold that was produced at the forges of Tiwanaku? The liquid metals produced at Tiwanaku and Puma Punku would have also included copper, silver, lead and tin. The ancient Peruvians, including the Incas, were known to use bronze, which is copper and tin combined into the stronger alloy. Iron would be an even more desirable metal, and while tons of iron slag has been found at the Olmec site of La Venta in Mexico and Posnansky discovered iron slag at Tiwanaku, traditional archeologists tend to insist that iron was essentially unknown in the Old World of North and South America.[6] The use of iron tools in ancient civilizations around the world is a highly controversial subject beyond the scope of this book.

Old print of the Gate of the Moon.



Old print of the monolithic doors at Xerxes' Palace.

The presence of gold and other metals is so prevalent in the Andes that unusual combinations of metals could be formed: electrum, a mixture of gold and silver; gold and lead alloys; gold and copper— which might have been the "oracalcum" of Plato's Atlantis. Even platinum artifacts have been discovered in South America, a difficult metal to liquefy because of the high temperatures involved.

The Gate of the Sun was cut from a solid piece of granite but it is now split into two pieces at one corner of the door. This splitting of the massive stone must have happened when the gigantic building collapsed for some reason. Certainly it was built to be nearly indestructible—yet it has been destroyed. Early photos of the Gate of the Sun show it half buried basically in the spot where it is standing today. However, there is a mystery to this as it is generally thought that the huge stone door is not from this spot, but was part of a pyramid that was outside the moat which surrounds the Kalasasaya plaza and Akapana Pyramid, or possibly even from Puma Punku. How it was moved to its present location, and by whom, is a mystery. Some visitor in the remote past apparently

came to Tiwanaku and then moved this gate a considerable distance to where it now stands by itself. We simply do not know who did this or why. Today, modern archeologists have stood the gate upright and placed the two pieces together as best they can. Notches and grooves on each side of the doorway indicate where other gigantic slabs of granite were fitted to the gate to create what must have been very impressive walls of an astonishing building—a pyramid, temple or perhaps metal processing factory. In many ways, a building that would have looked very similar to the buildings and "pyramids" that are found about a kilometer away at Puma Punku.

Old photo of the monolithic doors at Xerxes' Palace in Persepolis.

Persepolis: Sister City of Tiwanaku?

Our group walked over to the smaller megalithic doorway known as the Gate of the Moon. It too has been erected to a vertical position by modern archeologists; it was previously lying partially buried in the ground. Many archeologists have noticed the astonishing similarity to the megalithic stone doors that are found at Persepolis, today in southwestern Iran.

Persepolis, meaning “City of the Persians” in Greek, is an amazing city. It is thought to have been founded in 515 BC as the capital of the Achaemenid Empire, and lasted until about 330 BC. The city is megalithic and today it is a UNESCO World Heritage Site. The megalithic solid-stone doors that are still standing for visitors to see today are very similar to some of the monolithic doorways at Tiwanaku, like the Gate of the Moon. The articulation on the doorjambs is nearly identical and it seems astonishing that such doors would be created in such a similar manner on opposite sides of the world. Other solid stone granite doorways can be seen in certain temples in Egypt, Angkor Watt in Cambodia, My Son in Vietnam and at ancient sites in Indonesia like Candi Sukuh on Java. Monolithic doors are not always easily spotted, blending into the surrounding architecture as at Angkor Wat or My Son, and sometimes they are broken and therefore do not appear to actually be one piece of stone. Such gateways are strong and add to the stability of a structure built in such a fashion.

These ancient monolithic doorways are something to be examined more carefully. There are no comparative books on the subject to my knowledge, and references to them are quite occasional. The Gate of the Sun and the Gate of the Moon are two of the most famous examples, but obviously there are many others around the world, including the magnetic, monolithic doorways of the seldom-visited Palace of Xerxes at Persepolis.

Old photo of the monolithic doors at Xerxes’Palace.

In many ways, Persepolis almost seems like a sister city to Tiwanaku, particularly the articulated monolithic doors that are so impressive. Both these

largely ruined sites (more is standing at Persepolis than can bee seen at Tiwanaku) are famous for these solid granite doors that are much photographed. Certainly it would seem that the megalithic builders of these cities shared some astonishing engineering technology. The engineers at both sites would have had to overcome the problematic logistics of quarrying, moving and then cutting and erecting such heavy and difficult walls and doors. Such spectacular results are not seen at that many archeological sites, even megalithic ones.

Old photo of reused doorway at Tiwanaku village, French Expedition, 1903.

The amount of work involved in the quarrying and dressing of such large slabs of granite would seem to be tremendous, and the finely polished slabs of granite then had to have the doors cut into them, involving cutting the interior right angles that are extremely difficult to articulate. Further articulation was then made inside the doors for artistic effect, involving even more tedious cutting on the hard stone. Then the massive doorway weighing many tons was moved to the building site where it would be further cut and fitted to other gigantic granite slabs that were also finely polished like the door. And supposedly all this was done by people who had no knowledge of the wheel and only primitive tools like stone hammers and bronze chisels. Or, can we find evidence of more advanced technology? Also, what gigantic cataclysm destroyed these incredibly well-built structures?

If one is looking for evidence of such a high technology and cataclysmic upheaval, one need look no further than the ruins of Puma Punku, approximately one kilometer away. This would be our next stop on our visit to the area.

An old print of the giant blocks at Puma Punku.

The Astonishing Ruins of Puma Punku

Our group piled out of our minibus and walked up to the high wire fence that surrounded Puma Punku. We walked through the gate to the ticket booth where we showed the guard our tickets and he punched a small hole in each one. I had been here a number of times, including several visits with Jennifer, but Chris Dunn had accompanied us only once. I hoped that he would remain excited by Puma Punku and agree with me that the site showed evidence of ancient power tools including drills, saws and sonic cutting heads that he had described in his books on advanced technology in Egypt.

We walked up the short trail beyond the gate toward some granite slabs and blocks that are the main collection of precision-cut stone blocks. It doesn't look like much when you first approach the area, but once you are there you see some very impressive granite and sandstone slabs that are positively huge. Keystone cuts for huge bronze clamps or cramps (more about these later) can be seen cut into some of the granite slabs, and it is evident that some perfectly-fitted ancient structure once stood at the site.

Looking around, we were amazed. Huge sandstone and granite blocks up to 27 feet long and weighing as much as 300 tons are scattered about like a child's building blocks. The normally-conservative *Reader's Digest* reported, "A jumbled heap of stones looking as if they were hurled to the ground by some great natural catastrophe, is all that remains of Puma Punku..."[41]

Puma Punku is typically called a pyramid by current archeologists, though early archeologists saw it more as a massive building with interlocked stones and water canals. They thought it was more like a huge wall around a plaza—like at the Kalasasaya—than a pyramid. It is thought that a large moat surrounded the complex, and this moat was probably connected to a canal system that was in turn connected to Lake Titicaca which is 15 miles away—not very far, and over very level ground. It is quite flat around Tiwanaku and Puma Punku with low hills to the east and west and the lake to the north.

The site, now said to have been built in 600 AD by some archeologists, is fenced off as a 150-meter square archeological site and is thought to have had three terraces with drainage systems and a sunken courtyard in the center. This sunken courtyard may have been a fountain or stone-lined pool like the larger version on top of the Akapana Pyramid. It is thought by some researchers that the walls of Puma Punku, like those at Tiwanaku, were covered with gold, textiles and, some archeologists think, paint of various colors. Some even suggest that both sites were covered in gold and garish painting, similar to some sites in Mexico and Central America.[27]

The whole complex, no matter the precise details of how it looked, must have been extremely impressive. Some reconstructions of the ancient walls are simply fantastic, and whatever structure stood here must have looked like a very modern building, no matter when it was built. We will get into the dating controversies about Puma Punku and Tiwanaku shortly.

Imagine a city of canals and moats with water also flowing out of fountains and down gutters. Inside the perimeter of these moats and canals were massive structures that were virtually perfect in their construction. The precision of the granite blocks is very fine, and as I watched Chris Dunn look at some of the blocks, I noticed that he was very impressed with the quality of the stonework.

Old photo of statue-blocks, French Expedition, 1903.

Early archeologists and visitors to Puma Punku noticed the fascinating feature of an ancient canal and moat system that surrounded the area and then continued for a short distance to Tiwanaku where a moat surrounded that city. Water from the canal at Tiwanaku was then pumped up to the reservoir on top of the Akapana Pyramid. Some early archeologists thought that it was a port area

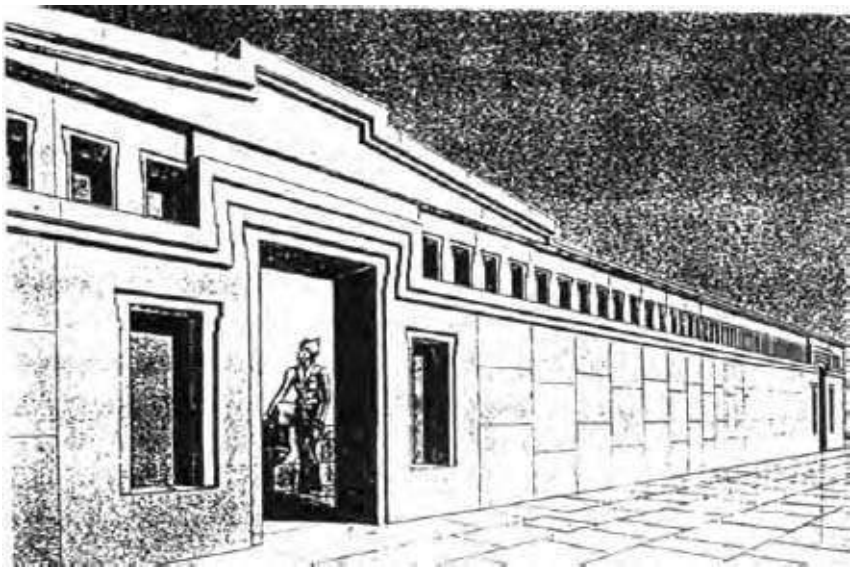
connected to Lake Titicaca, and in that they may have been right.

While modern archeologists concentrate on the moats around both Puma Punku and Tiwanaku, they ignore the idea that these moats were connected to a larger hydrological system featuring a canal connected to the lake a short distance to the north. Even side canals and other docks could have branched off of this main canal to Lake Titicaca. Probably these side canals would have been largely agricultural—even used for genetic engineering of the more than 200 types of potato grown in the area—with a vast area used in hydroponics. The possibilities are endless!

Keystone cuts on blocks at Puma Punku.

Indeed, the complex planning of huge canal cities like modern Amsterdam or Venice, or the much older cities of Carthage or Mohenjo Daro, can be compared to the detailed planning and huge scope of the Tiwanaku-Puma Punku complex, which goes far beyond the small area of the current archeological sites. It shows that some super-organized culture was behind the engineering and organization of its construction. This stands in stark contrast to the traditional views of the archeological community and its experts, who claim that even obvious satellite cities like Pucara, just north of Puno on the way to Cuzco, are not of the exact same culture, but “associated” with it. It would seem obvious that some small local group on the southern shores of Lake Titicaca did not just conceive of such a huge megalithic complex as some isolated tribal achievement. The same goes for Chavin and other megalithic sites in Peru and Boliva like Samaipata.

The whole brilliant scheme of the megalithic buildings of Chavin, Tiwanaku, Puma Punku and even Cuzco and Ollantaytambo, seem to be all part of some special plan to construct a network of superstructures that had advanced technology of all sorts involved in the plan. These geniuses—be they the Watchers, Nefilim, Hindu Avatars or other mythic heroes—had ships and aircraft, electricity and power tools, plans for huge temple-mining complexes that would create the metals they needed, and a burning desire to create a pilgrimage center and "navel of the world" for the peoples of the region to hear about in their villages. If the villagers actually made the trip to Tiwanaku and Puma Punku, in a similar manner that pilgrims visit Mecca and other shrines today, they would have been amazed at what they saw! It would have been a mind-blowing spectacle, even by today's high standards, of gold, giant granite walls, textiles, flowing water and, one would imagine, beautifully dressed men and women in the finest clothing and gold jewelry that anyone had ever seen. Indeed, it would have been a scene equal to any in ancient Egypt, Persia, India or China.



One version of an architect's reconstruction of Puma Punku.

The Keystone Cuts and Metal Clamps of Puma Punku

Keystone cuts are an interesting technique used by megalith builders around the world to bolster the stability of their construction. When placing adjacent blocks of stone, the builders would cut channels in the top of each block—in a mirror image, spanning the joint between the stones—into which a molten metal could be poured that would solidify and form a clamp that would keep the blocks together in the face of a temblor or other assault. They can be made in many

forms, but are most often in a double-T shape, or in a double-circle shape resembling an hourglass.

I have been documenting keystone cuts and the metal “clamps” (also called “cramps”) that are used to span the two (and sometimes three) stone blocks that exhibit these cuts at sites all over the world. They can be found at the Karnak Temple at Luxor in southern Egypt, as well as at the Edfu Temple near Aswan and other ancient Egyptian sites. They can be found at Delphi in Greece and various ancient sites in Turkey, and at Baalbek in Lebanon, the site of largest megalithic blocks ever quarried. Modern archeologists often claim that the Romans built Baalbek, but it would seem obvious that any Roman constructions at Baalbek were erected over larger and older buildings.

Japanese archeologists were excited to find keystone cuts and bronze clamps during their excavations of Angkor Wat in Cambodia. Angkor Wat is apparently older than then the 12th century AD date it is normally given, as it was originally built as a city with Hindu temples that were later turned into Buddhist temples. Modern archeologists say this all happened in only a hundred years, and then the city suddenly collapsed after being sacked by the Cham of Vietnam in approximately 1177 AD, only a few decades after it had supposedly been built. Some archeologists, including myself, think that Angkor Wat is many hundreds of years older than currently thought, in much the same way that Baalbek and the Olmec sites in Mexico are older than mainstream archeologists claim.

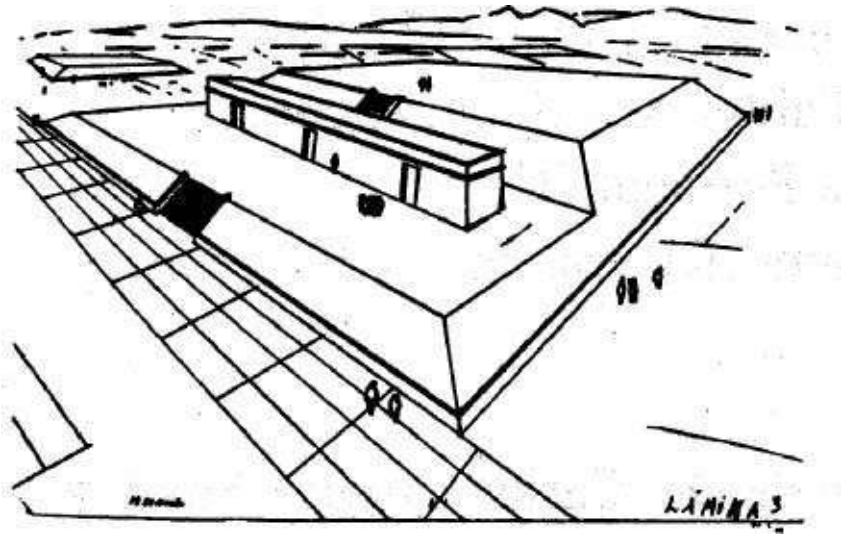
Keystone cuts on blocks inside a trench at Puma Punku.

Blocks at Puma Punku on top of pillars of mud—from a cataclysm?

The Cham of Vietnam were much older than 1177 AD. They go back to about 200 BC, and they also used keystone cuts and metal clamps in their cities, including the megalithic city of My Son in central Vietnam. The Cham ruled much of Southeast Asia from their island capital, Cham Island, off the coast near My Son, and are thought to have gone throughout Indonesia and into the Pacific on their long trading voyages. They were Buddhists and may have been part of the many waves of megalith-building voyagers who ventured into the Pacific Ocean, leaving impressive structures in such places as Tonga, Tahiti and the Marquesas Islands.

Indonesia is an ancient land with various cultures having influenced its many islands, including early Hindu voyagers, Buddhist missionaries and eventually Muslim traders who attempted to convert many Indonesians from Buddhism or Hinduism in the last 500 years. Today Indonesia is the most populous Muslim country in the world, though islands like Bali remain traditionally Hindu. On the main island of Java is the massive man-made Buddhist temple of Borobadur which is an artificial hill covered with granite steps and finely carved walls. Terraces at the top of the structure are lined with stupas made stone latticework. Each hollow stupa contains a granite statue of Buddha sitting in a lotus position. Borobadur is a megalithic Buddhist temple which also has keystone cuts in a T or hourglass shape into which a molten metal was poured in order to fasten the stone blocks together in case of an earthquake or volcanic eruption, both of which are common occurrences in Indonesia. In fact, Borobadur is partially

covered in a lava flow from a volcanic eruption in about 928 AD. The site has an inscription that is currently dated to 842 AD, though it is not known who built Borobadur or when it was built. Certainly it was built before 842 AD, and archeologists conservatively think that it was built about 800 AD, though it may be many hundreds of years earlier. One could easily conclude that the building of My Son, Borobadur and Angkor Wat would have occured at approximately the same time.



One version of an architect's reconstruction of Puma Punku.

On the other side of the Pacific, in Bolivia and Peru, there are also keystone cuts and of course the metal clamps that go with them. Keystone cuts in T, hourglass and circular forms are found at Puma Punku, at certain spots in Tiwanaku like the Akapana Pyramid, at the Temple of the Sun ("Qorichancha") in Cuzco and at the so-called Sun Temple at Ollantaytambo. While Puma Punku and Tiwanaku are admitted to be pre-Inca in construction, archeologists continue to think that the Qoricancha in Cuzco, as well as the structures at Ollantaytambo, were built later by the Incas. But the keystone cuts at these sites are confusing—and archeologists admit this. We will discuss the confusing keystone cuts in Cuzco and Ollantaytambo in other chapters.

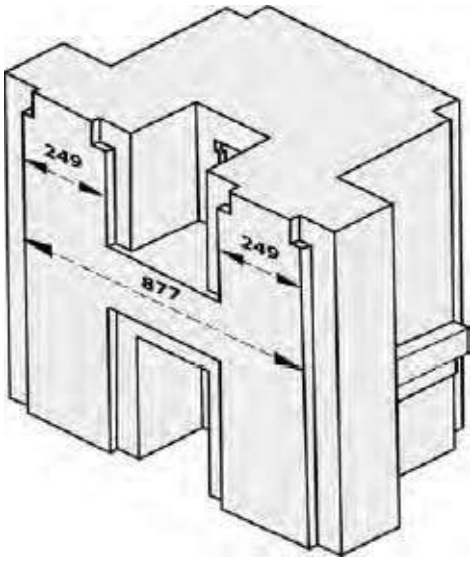


Diagram of an H-block at Puma Punku.

Still, what is highly curious about this unusual megalithic construction technique is that this engineering style exists in various places around the world that archeologists maintain have no connection. They maintain that this construction technique was developed independently in South America, Southeast Asia, Egypt, Greece and other places.

As I examined and photographed some of the keystone cuts at Puma Punku, I was amazed at the size of some of the blocks that exhibited the keystone cuts. The blocks of granite and sandstone were so huge that it would hardly seem that they would be going anywhere once they were put into their walls, but keystone cuts (and clamps) had definitely been used. In spite of that, the walls had been destroyed by some powerful force, either man-made or from some cataclysm of nature like an earthquake or tidal wave.

What is more, no matter whether this building technique was invented independently in the Andes or came from Africa, Europe or Asia, it still required that a molten metal alloy be poured into the keystone cuts where it would solidify into a hard metallic clamp that spanned the blocks of stone. The harder the alloy, the better—it could be one of copper or lead, but better still would be one of bronze or iron. Where did this metal alloy come from? Somewhere in the vicinity of Puma Punku and Tiwanaku was a mine with copper and other ores, and a processing facility for crushing the ore, refining it, and foundries for generating the tremendous heat that would be required to make the molten metals that were to be poured into the clamps. Where were they? If I am correct, they were right here at the site, and both Puma Punku and Tiwanaku were essentially metal refining and processing sites.

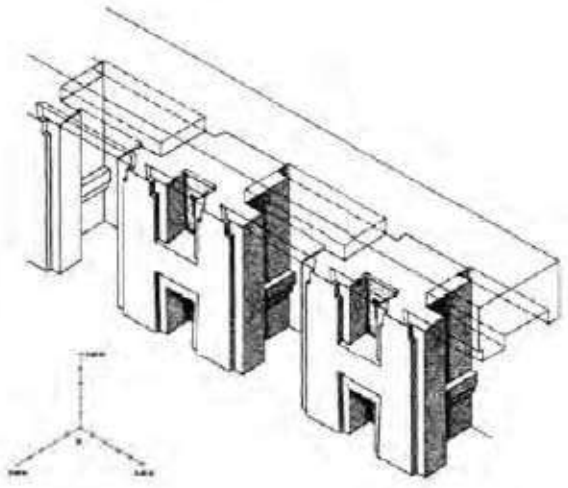
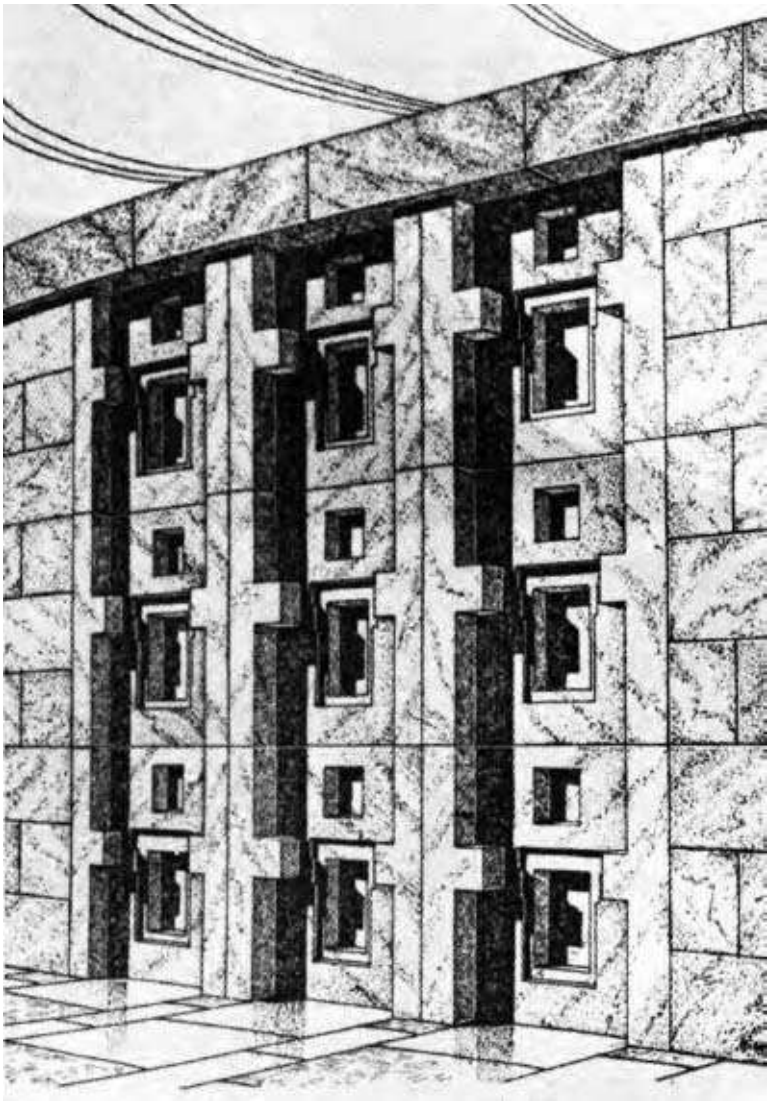


Diagram of the H-blocks at Puma Punku.



An architect's rendering of his vision of Puma Punku

An architect's rendering of his vision of Puma Punku.

The Amazing Precision and Technology at Puma Punku

Puma Punku apparently was not a showcase for statues such as those found at Tiwanaku, though it is difficult to say because of early looting—some of the statues taken to the village of Tiwanaku or La Paz may have originally been at the site. Instead, Puma Punku is famous for its large stone slabs, the keystone cuts and the geometric designs precisely cut into the granite, such as concentric Swiss-style crosses and triangles.

I walked with Chris Dunn around one of the 300-ton sandstone slabs that had several large keystone cuts in it, and other articulation including finely cut and polished angles and recesses. Chris had brought some of the precision measuring instruments that he used in his work as the manager of a metal machining shop in Danville, Illinois. He was curious to measure the flatness of some of the more precise stones, and to check to see if the so-called H-stones, of which there were quite a number, were all exactly the same.

These stones all look very similar to each other and in some cases appear to be identical. By doing some precise measurements, Chris thought he might be able to determine if the stones actually were identical, which would indicate that some sort of precision, computer-aided machine had cut these granite blocks in a mass-production run of interlocking stone blocks that could be fitted together in a similar manner to the popular Danish toys called LEGO Bricks.

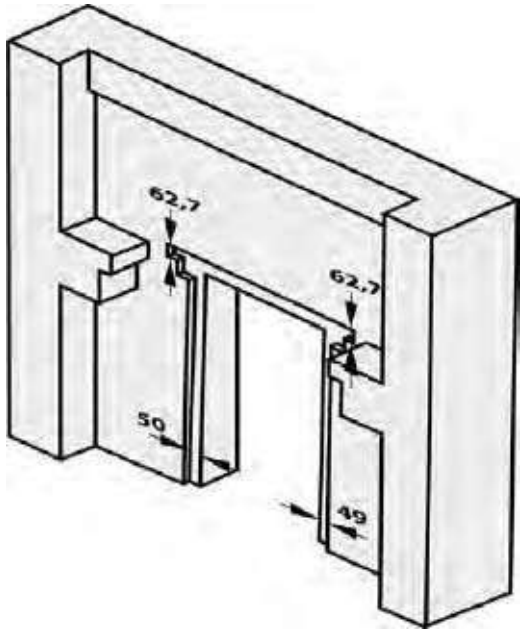


Diagram of a monolithic door at Puma Punku.

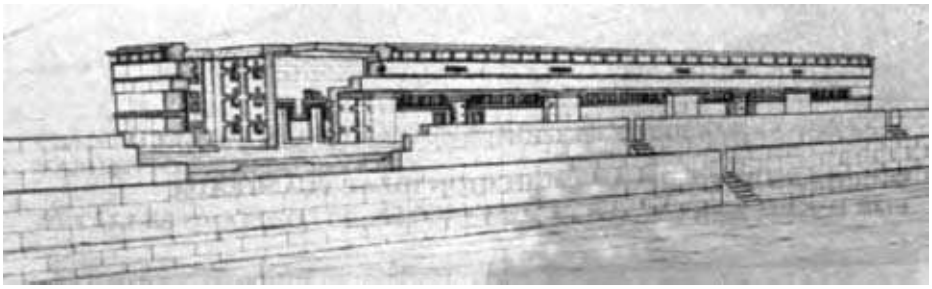
What Chris discovered was that the blocks, while meticulously made, were not identical—each was slightly different. Therefore, it would seem that a certain amount of precision was used on the blocks, but they were not dumped out of a factory like LEGOs. They did have as part of their design, however, an articulation that allowed them to be fitted into one another and interlock so as to create a very structurally sound wall. This is similar to what is called "cyclopean" construction, in which very large stones are cut extremely precisely into polygonal shapes that fit together like pieces of a jigsaw puzzle. This type of cyclopean stonework is not seen at Tiwanaku or Puma Punku, but is very evident around Cuzco and will be discussed in later chapters. The stones at Puma Punku were interlocked by grooves and articulated notches in the edges of the stones, and cemented together by keystone cuts and clamps.

I had been with Chris in Egypt several times where he also used his precision tools to measure such things as interior angles, the precise flatness of a polished slab or the curvature of a granite pillar. He was always looking for signs of the possible use of precision power tools, and for granite or basalt objects that he thought would be extremely difficult to make with copper chisels or stone hammers, which were the only tools available to the Egyptians, according to archeologists.

"Do you think that these stones at Puma Punku were possibly made with some sort of power tool?" I asked him.

He took his wide-brimmed hat off and gave his head a scratch. "This is all very impressive," he said. "The stonework is very excellent, but I have to take some more measurements."

We walked a bit farther, into the central hill that Puma Punku stands on (actually, its own gigantic pile of rubble now covered with soil) and I showed him another curious stone lying on the ground which had some carefully drilled holes and a big groove cut precisely along one edge.



Another architect's version of how Puma Punku may have looked.

"Here, Chris, take a look at this granite block," I said as we both got down

on our knees to look at the perfectly squared, drilled and grooved block. It was impressive.

"Yes, this does look like it was done with some sort of power saw and drill," he said as he began examining the fine block of workmanship. Soon he had his gauges out and was measuring the width of the groove to see if was consistent and precise; he then began to measure the distance between each small drill hole.

I was amazed by the stonework as well, and while not a machining expert like him, I simply had to conclude that this was the work of special power saws and drills that worked the granite in much the same fashion as our modern tools do today. Cutting and working granite in the way that can be seen at Puma Punku, particularly creating these small grooves and holes, would take the equivalent of diamond-tipped drills and saws, tools with working surfaces that are fixed with a super hard composite of diamonddust and very hard glue.

Chris has maintained in his books on Egypt that whoever was making the granite obelisks at the quarry at Aswan was using a large, mobile cutting machine with tank treads that could move itself through the bed of stone as it cut out the gigantic granite towers.[3] Such a machine would be very similar to the kind of heavy machinery made by such companies as Caterpillar and John Deere. Was heavy machinery like that, incredibly, used at Puma Punku and Tiwanaku as well?

Chris continued to make his calculations while the rest of the group walked about the scattered stones taking photos. It seems like Puma Punku changes every few years when I visit because the Bolivian archeologists will do a little digging, and also bring in some heavy machinery of their own to flip over some of the buried stones so we can see what was underneath. On this visit there were a number of areas with some new stones exposed, plus a couple of doors brought to a standing position. I walked over the top of the rubble hill and down toward the northern portion of the fence that encloses the site.

In this sector, one can view the trenches that archeologists have dug in preliminary excavations. Since work at the site is so sporadic, they have remained essentially the same for many years. What one can see is that sections of granite walls and slabs of stone are interspersed with, and lay atop and below, thick layers of mud; it is as if they were wrenched apart by a huge wash of mud and muck to lie in the precarious positions they now hold. It is not like other archeological sites where layered trenches reveal building components and foundations still in their basic formations, having been slowly covered up by the elements over the ages. Indeed, as we will explore in a subsequent chapter, it seems that a destructive wave of water from Lake Titicaca violently destroyed

Puma Punku, Tiwanaku and other ancient sites to the south of the lake.

Also in this area is a trench where a series of granite blocks are exposed that have keystone cuts connecting each of them. Indeed, it would seem that, at Puma Punku at least, keystone cuts with their metal clamps were used in most of the construction. Again, aside from it being an unusual method of fastening stone blocks together, it uses a considerable amount of metal, which is essentially locked inside the wall and invisible—and impossible to remove—until the wall is destroyed.

Zoser's Mortuary Monument at Saqara, Egypt. Did Puma Punku look similar to this?

Who Were the Builders?

The sun was getting low in the sky and they were getting ready to close all the sites and museums. As we walked back to our minibus and got ready to go back to La Paz, I wondered about who the masterminds were that planned and built Puma Punku and Tiwanaku. Extraterrestrials who had landed in their spaceships in search of gold and other metals, or local village chiefs who had already masterminded the complex canals and hydraulic systems for local agriculture? Perhaps they had come from far away and were none other than those mysterious seafarers who mapped Antarctica before it was covered with ice, as seen in the Piri Reis Map at the Topkapi Museum in Istanbul, ancient sea kings who sailed the world spreading a megalithic culture, who wore red turbans with a knot in the front—called by some the Atlantean League! Others might call them the Cham or Kam, the people who gave their name to Cambodia and Egypt, which is called in Arabic and Egyptian " Kam" or "Kham-et." But why

would anyone want to come to one of the most desolate, inhospitable places on earth and construct a megalithic city?

While Bolivian archaeologists insist that ancestors of the local Aymara Indians built both Tiwanaku and Puma Punku as local shamanic ceremonial centers, it would seem that their culture has certainly taken a slide back, as the Aymara can now barely make a subsistence living on the high, barren plateau. Neither they nor the Spanish government of impoverished Bolivia are capable of duplicating the engineering feats of Tiwanaku or Puma Punku. A serious lack of funding keeps Bolivian archeologists from doing more than the most basic digs and reconstructions, and they are often criticized by the global archeological community for their haphazard work at the sites. They simply do not have the resources for a proper study of Puma Punku or Tiwanaku. And, there are many other satellite sites to the east that are megalithic in nature and largely unstudied.

Mainstream archeologists are largely blind to the extremely precise and difficult stonework, and focus more on the ancient agriculture of the area: raised fields of extremely efficient aquaculture that grew tremendous amounts of potatoes, maize (corn), quinoa, beans and other plants. They do not address the complexities of dressing, moving and erecting such super-megaliths as seen at Puma Punku and Tiwanaku. A good question is the simple “why” were the builders using such large and perfectly cut granite blocks, and why was their complex so perfectly planned in advance to attain what are amazing results by any standard. Were Tiwanaku and Puma Punku the original El Dorado—the City of Gold? While the story of El Dorado, “the golden place” or “the golden man,” was a legend popular during and after the Spanish Conquest, it has its roots in older stories in both the New World and the Old. There are the Greek stories of Jason and the Golden Fleece—a place of fabulous spun gold that was very far away—a city of gold only reached by the Argonauts and their fleet of ships! There are the stories of the Seven Cities of Gold from Portugal and later Mexico. Stories of golden temples with gold statues are some of the most famous tales in Southeast Asia, and in fact, the famous Emerald Buddha (made of solid gold, not emerald) now in Bangkok is from just such a fabulous golden temple lost in the jungles of northern Thailand.

Stories from ancient times tell of a land of gold. Called Ophir in the Bible, it was said that King Solomon’s ships made a three-year voyage to this far land. While the Bible does not give all of the specifics, this voyage must have been made by stopping in India and Indonesia and then going on to the land of incredible gold that was available by the shipload. This land of gold was a one-year voyage away from Solomon’s port on the Red Sea known as Eilat. From

here the ships went through the Red Sea to the Indian Ocean, and eastward to the Java Sea and beyond to Ophir.

Once they got there, they spent one year in Ophir, growing food perhaps, and trading and working for the local gold mining company. They then took one year to make the journey home. On the way back to the Red Sea, they probably again stopped in India and Indonesia to pick up the peacocks, apes and spices mentioned in the Bible, as any trader would do. The full voyage, as I have said, and as indicated in the Bible, took three years.

Was this a voyage from the Red Sea, across the Arabian and Java Seas into the Pacific and then to Bolivia? How long would it take to make such a magnificent voyage? It seems like it could be done in one year. Was Tiwanaku the Ophir of ancient times— the land of gold? And what of Jason and the Argonauts' journey to a mysterious land of gold, a land where the fleece of lambs was made of spun gold? There was such a fabulous amount of this "spun gold" that a voyager to these lands—who could return—would be an instant millionaire! Was this fabulous land of the Golden Fleece, so far away across the sea, the land of Tiwanaku and Puma Punku and its fabulous gold reserves? Are the tears that the Gateway God is crying symbolic of the molten gold and other metals that were being processed here?

The Controversial Dating of Tiwanaku and Puma Punku

What about the controversial dating of these sites? Were they built at the same time? Which one is older? Are they only a few hundred years old or are they many thousands of years old? Are they from 600 AD, or 1500 BC or 15,000 BC? There are theories that support each of these dates, and more!

The highly conservative archeologists of the last few decades now give a date of about 200 BC for Tiwanaku and about 600 AD for Puma Punku, meaning the Puma Punku was built some 800 years after Tiwanaku. Can this possibly be the case?

Of all the archeological . sites in the world, perhaps I Tiwanaku is the most I controversial in terms of I its dating. No other major I archeological site seems to I have such a wide range of I dates associated with it, with I estimates as wide apart as I more than 15,000 years.

Arthur Posnansky and Bennett, 1933.

The *Encyclopedia Britannica* says this about the dating: “Some scholars date the earliest remains found at the site to the early part of the Early Intermediate Period (c. 200 BC–AD 200); others suggest that the culture is evident in artifacts from the 2nd millennium BC.”

In this brief sentence we clearly see the problem archeologists have in dating Tiwanaku: the “earliest remains found at the site” date to between 200 BC and 200 AD, but other evidence suggests the culture that built the site might have been around since 2000 BC, literally 2,000 years earlier! The datable remains at any site are not necessarily indicative of when the site was built. As I have often pointed out in my books, many archeological sites around the world are incorrectly dated, and generally they are much older than the mainstream archeologists maintain. The list of sites could be a very long one, but some of the sites that are apparently much older than generally recognized include: the Sphinx at Giza; the Osirion temple at Abydos; the megalithic walls on the Marquesas Islands; Angor Wat in Cambodia; the statues on Easter Island; Teotihuacan Pyramid in Mexico; and the Ollantaytambo Sun Temple in Peru.

We can see that modern archeologists have a great deal of difficulty in giving dates to sites around Lake Titicaca. Some of the sites are from the “Tiwanaku culture” (200 AD?, 200 BC? 1500 BC? 3500 BC? 15,000 BC?) while other sites are from the “Inca culture” (800 AD? 1200 AD? 1400 AD?) And other artifacts are hopelessly confused as to their dates and the culture associated with them, such as the towers known as “chullpas” at Sillustani, Cutimbo and other areas along the southwest shore of the lake. Depending on which tourist guide or “archeologist” one happens to ask, these megalithic towers of finely-fitted stones are either Inca (1300 AD?) or pre-Inca (200 AD?) or from the Tiwanaku culture (1500 BC?).

One site on the Peruvian side of the lake, near the north end on the main road to Cuzco, is Pucara. Because of the obvious similarity of statues found here to

the statues at Tiwanaku, this site has not been given the “Incas built it” designation. Instead, archeologists admit that it is pre-Inca and “resembles” the culture of Tiwanaku. Says the *Encyclopedia Britannica* about Pucara:

> Pucara—pre-Columbian site and culture in the southern highlands of present-day Peru in the northern basin of Lake Titicaca. The site is known for its unusual horseshoe-shaped temple or sanctuary of stone masonry. Pucara-style stone sculptures and Pucara pottery show resemblances to those of Tiwanaku, in the southern Titicaca basin. Because the earlier levels at Tiwanaku show Pucara-type pottery, it is apparent that the Pucara culture was a forerunner of the Classic Tiwanaku styles. The Pucara is generally dated to 300 BC to 300 AD, in the Early Intermediate Period.

Yet, many Bolivian archeologists contend that the earliest phase of Tiwanaku culture can be dated back to at least 1500 BC. In the official guide that is sold at the Tiwanaku Museum, *Tiwanaku Guide: Culture Patrimony of Humanity,*[42] it is stated that the earliest periods, I and II are from 1500 BC to 45 AD. The “Classic Urban” periods III and IV are from 45 AD to 700 AD, and a later Period V is given the dates 700-1200 AD. Other archeologists give the main dates for Tiwanaku as going to about the year 1000 AD. They maintain that Puma Punku was not built until about 600 AD. Therefore, Tiwanaku culture is given the rather extended dates of 1500 BC to about l000 AD. That is an astonishing 2,500 years of civilization ascribed to Tiwanaku, a city that appears to have been destroyed in some massive cataclysm in the past—was it only in 1000 AD? When one looks at the site today, that seems virtually impossible!

As for Pucara, it must surely be older than 300 BC if it is some sort of precursor to the Tiwanaku culture, and a date like 900 BC might seem better. But Pucara is probably older than that. And probably Pucara was not some precursor city or temple to Tiwanaku, but one of many satellite towns and temples (mining complexes?) that were all around Lake Titicaca and farther afield in Sillustani, Cuzco, Ollantaytambo, Paracas, Chavin and other areas.

Incredibly, some researchers say that Tiwanaku was built about 17,000 years ago. Archaeologist Arthur Posnanski, who studied Tiwanaku for thirty years at the turn of the century, decided that the city was built around 15,000 BC. This astounding date has influenced many writers, and Posnanski was a fascinating person. His story is one to have a good look at.

Arthur Posnansky and the Early Dating of Tiwanaku

Arthur Posnansky was a Polish-German archeologist who did much of the early work at Tiwanaku. After years of research, he estimated that the city had been built around 15,000 BC, some 17,000 years ago! He was born in Vienna, Austria on April 13, 1873. He joined the Austrian-Hungarian Royal Navy around 1891 at the age of 18 and served as an engineer for some years. Posnansky made several extensive training voyages with the Austrian-Hungarian Royal Navy, which took him to South America and remote spots of the South Pacific, including Easter Island—a place which greatly impressed the young engineer. While at the island Posnansky made a number of ethnological observations which he published under the title of *Die Osterinsel und ihre praehistorischen Monumente* (Easter Island and its Prehistoric Monuments). He eventually became the author of over six books, including *Tihuanacu, the Cradle of American Man; Campana de Acre: La Lancha "Iris";* and *Rasas y Monummtos Prehistoricos del Altiplano Andino* (Prehistoric Faces and Monuments of the Andean Altiplano).

In 1896, at the age of 23, the adventurous Posnansky essentially emigrated to South America and participated in various expeditions exploring remote areas of the upper reaches of the Amazon River. Because of his participation in these expeditions he became an experienced navigator of certain tributaries of the Amazon. He then became the director of a river navigation company known as "La Empresa de Navegacao dos Rios Purus e Acre" (The Company for Navigation of the Purus and Acre Rivers).

Arthur Posnansky, c.1942.

Posnansky got involved in what is generally known as the Acre River War in 1899, when a group of rubber tappers from the Rio Acre, known as “Acreanos,” decided to create their own country. Posnansky ended up fighting for the Bolivian government during this war, which was essentially a border dispute between Bolivia, Brazil and the “Acreanos,” who were mainly Brazilian, and who were trying to create their own republic called “Acre.” Rather than being a banana republic, Acre was to be a rubber republic.

It all started when the rubber boom in the Amazon, starting in 1870, began to penetrate into the Acre and Purus Rivers along the borders of what is today Brazil, Peru and Bolivia. This large and poorly defined area is still fairly remote, and few roads exist in the region. Most travel in the area is by river. Though the Acre area was supposed to be part of Bolivia, it was very remote for the poorly equipped and financed Bolivian government to control, and it was more easily reached from Brazil and the many tributaries of the Amazon. Therefore, Brazilian rubber tappers flooded into the area, and money from the rubber trade was pouring into their coffers.

The Bolivian government, attempting to tax the Brazilian rubber tappers in their remote section of the Amazon, set up a customs house at Puerto Alonso on the Acre River to extract taxes on the rubber exports which were leaving down the river into Brazil. This precipitated a conflict with the Brazilian rubber tappers who had now settled in the area, and they declared their independent state of Acre in July of 1899. The border dispute between the Brazilian government, the Bolivian government and the “revolutionaries” now escalated.

Posnansky became a blockade runner to rescue Bolivians at the Acre garrison who were besieged by the Brazilians. In his shallow-draught steamer, the *Iris*, Posnansky navigated upstream amid hostile gunfire and rescued survivors at the garrison, but he was shot and wounded by Brazilian forces and then captured by them. The year was now 1901 and he managed to escape from what was essentially a Brazilian militia, and went by boat down the Amazon and back to Europe. He had lost his ship and all his property in Brazil because of his support for Bolivia and eventually detailed his escapades in his book *Campaña del Acre: la Lancha “Iris—Aventuras y Peregrinaciones* (roughly The Campaign of Acre: the Boat “Rainbow”—Travels and Adventures).

Old print of pillars from Tiwanaku.

In the later part of 1901 Posnansky returned to Bolivia, hoping that the Bolivian government would give him some monetary compensation, but the government was bankrupt. He used his talents as an engineer in some local mining ventures and prospered. The Bolivian government recognized his services the best they could with two gold medals, one in 1901, the other in 1903. In 1905, his government service continued when he was elected to La Paz City Council and during that year he drove the first car seen in the region into La Paz, to the delight and wonder of the citizens.

After becoming settled in Bolivia, Posnansky repeatedly traveled the Bolivian and Peruvian highlands in efforts to locate, study and describe Inca and pre-Inca archaeological sites, especially those found along the shoreline and on the islands of Lake Titicaca, such as the Island of the Sun and the Island of the Moon. Posnansky was given an honorary doctorate from the University of La Paz and he officially became a professor of archeology. He made long studies and excavations at Tiwanaku and other sites and wrote his many books until his death in La Paz in 1946.

In 1945 the first two volumes of his four-volume set on Tiwanaku, *Tihuanacu, the Cradle of American Man,* were published. The final volumes were published in 1957. In these books, Posnansky argued that Tiwanaku was constructed some 17,000 years ago by the earliest of the Americans, a red-skinned race. However, he did not think that these people were the Aymara, who he believed were more recent newcomers, preceding the Incas as inhabitants of the area. Posnansky also saw Tiwanaku as the origin point of civilization throughout the Americas, preceeding the Inca, the Maya and others.

While Posnansky's dating of Tiwanaku is now largely discounted by modern archeologists, his books are an extremely valuable contribution to the archeology of the site with meticulous maps and fascinating early photographs of how the site originally looked, before the modern reconstruction of the site in 1960s—a reconstruction that has been highly criticized as inferior. The original Tiwanaku would have been much, much more imposing than the impression visitors are left with today. Posnansky's photos also give us a record of statues and stones that are completely missing today—things that were looted and either used as building material or sold to antiquarians. Posnansky believed that Tiwanaku was only a seasonally occupied ceremonial center, but the site is now thought to be instead a full fledged city with a large permanent population.

The reason that Posnansky gave a date of around 15,000 BC to Tiwanaku was because his research over several decades showed him that the alignments in Tiwanaku were offset from what should have been "true" positions. Instead of being sited to the south, some of them were slightly offset to the southwest. According to Posnansky, that offset indicated that the site lines were from a time when the stones were aligned with true south.

Archeoastronomy was in its infancy in the 1920s when Posnansky first started to study Tiwanaku. Archeologists in England were starting to theorize that Stonehenge was somehow aligned with the solstices and other planetary movements. Posnansky reasoned that the central plaza at Tiwanaku, the Kalasasaya, would be aligned with the solstices. He surmised that a priest standing at the center gateway of the west wall of the plaza could view the sun rising during the year at the outer edges of the stone pillars that cap the north and south ends of the eastern wall. This wall had a number of very tall megaliths that seemed to poke up above the rest of the wall at regular intervals. Along these lines of Tiwanaku as an astronomical observatory of some kind, he reasoned that the rising sun could be tracked across the great eastern wall of the Kalasasaya plaza and that during the solstice, it would appear in middle of that wall. But it didn't.

As Posnansky made his careful measurements he discovered that the sun and its alignment to the eastern wall was 18 degrees off. With the support of other archeologists, he wondered how the builders of Tiwanaku, geniuses that they were, could have misaligned their major temple? Could it be that they didn't misalign their magnificent structure? Perhaps when the builders created this magnificent complex they had aligned it correctly, but it was done so far back in the past that the sun's course had changed over time. This is known as the "obliqueness of the ecliptic" and it has to do with the tilt of the earth's axis and a

41,000-year oscillation cycle of the poles.

The earth's poles are currently tilted with respect to the plane of the Solar System, creating the "obliqueness of the ecliptic" angle-tilt. The present tilt is 23 degrees and 17 minutes. According to a consensus of astronomers, it does not always remain so. Our axis supposedly oscillates between two extremes: from 22 degrees and 1 minute to 24 degrees and 5 minutes. This oscillation cycle is said to require 41,000 years.

Posnansky consulted a number astronomers starting around 1925, and when he gave them the measurements he had made of the eastern wall of the Kalasasaya ("Temple of the Stones Standing Up") they came back to him with a date that was approximately 15,000 BC, an astonishing date by the standards of any archeologist. The 18-degree misalignment now translated to the building of Tiwanaku 17,000 years ago! Posnansky, who died shortly after the first volumes of his book came out, seemed convinced of this great age. Posnansky's dating came before the use of carbon-14 dating, or ceramic dating techniques, and that was something to basically discredit him in the eyes of archeologists who came after him.

Artifacts that might be carbon-14 dated can be left at a site that was destroyed or abandoned many years before. If a building has been abandoned for thousands of years—as many megalithic structures have been—it can contain all sorts of bone, shell or wood matter left by ensuing generations that could be dated to all sorts of time periods. Clearly, these time periods would not be the actual building date of the ancient structure. Also, structures originally destroyed in some water cataclysm like a tsunami or similar tidal wave can literally be washed clean of any datable material. Only gigantic slabs of granite and basalt remain, and much of this structure may be covered in mud and debris. Sometimes this debris is datable if it contains preserved organic material.

So, modern archeologists essentially ignore Posnansky's dating for Tiwanaku and go with carbon-14 dates. These dates, of which the oldest dates are the most important, range to about 2,000 BC. According to the museum at Tiwanaku and its official booklet, *Tiwanaku Guide*,[42] the oldest objects dates to circa 1550 BC, in stark contrast to the statement in *Encyclopedia Brittanica* that the oldeest datable material is from 200 BC to 200 AD. Modern archeologists want to have some long "build-up period" for Tiwanaku so they don't think the megalithic buildings came until about 200 BC when the local stonemasons and engineers had honed their skills to the point of building such colossal structures as Puma Punku and the gigantic Akapana Pyramid with the lake at the top.

It would seem, on the other hand, that Tiwanaku and Puma Punku were built

as pre-planned complexes that took an enormous amount of skill, labor, engineering knowledge and vision. It was something that seems incredible by any standard: huge buildings, plazas, pyramids and canals. Molten metal is available at the site to pour into the bronze clamps that bind some of the stones. I think it was a metallurgical center. Did it need to be aligned to the rising sun?

The answer would have to be, no, it did not. But, it certainly could have been. One has to wonder why it was not? Maybe it was, but it was at some other time that has not been correctly calculated. The major walls around the Kalasasaya Plaza were highly eroded, but many gigantic granite blocks still stood in place. Modern archeologists do not believe that Tiwanaku was built in any special astronomical alignment. They are probably right. Chavin, as an example, does not seem to be aligned with the solstice or any stars. It sits deep inside a mountain valley, and as I have maintained, it was probably a mining center, like Tiwanaku.

If Tiwanaku and Puma Punku were built as purely functional metallurgical processing plants, including the hydrological works of diverting rivers and using a ram pump to get water to the top of the Akapana Pyramid, then there would be no special reason to align every single plaza, park or structure to the solstice. Some buildings may well be aligned to the solstice, but not all buildings are.

So, if we are to discard Posnansky's date as too old, and the 200 BC date as too young, we are left with dates for the building of Puma Punku and Tiwanaku at around 1600 BC. Could it be earlier? According to recent finds made by Bolivian archeologists, now at the Precious Metals Museum in La Paz, the dating for Tiwanaku seems to be 3500 BC!

The discovery of Sumerian objects in the vicinity of Tiwanaku has rocked the archeological community and creates a time frame and context of what Tiwanaku was and who built it. It is like a knockout punch to the mainstream archeological community and will probably be covered up by them as much as possible, or at least disregarded. Yet, the evidence resides in a national museum. It suggests that the original builders of Tiwanku came from Sumeria circa 3500 BC! I will discuss this amazing discovery in the next chapter.

Keystone cuts on blocks at Puma Punku.

Chris Dunn examines a block with small drill holes in it at Puma Punku.

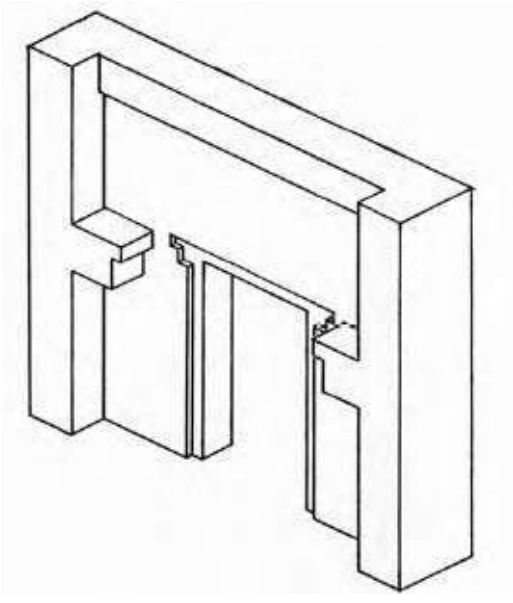


Diagram of a monolithic door at Puma Punku

Diagram of a monolithic door at Puma Punku.

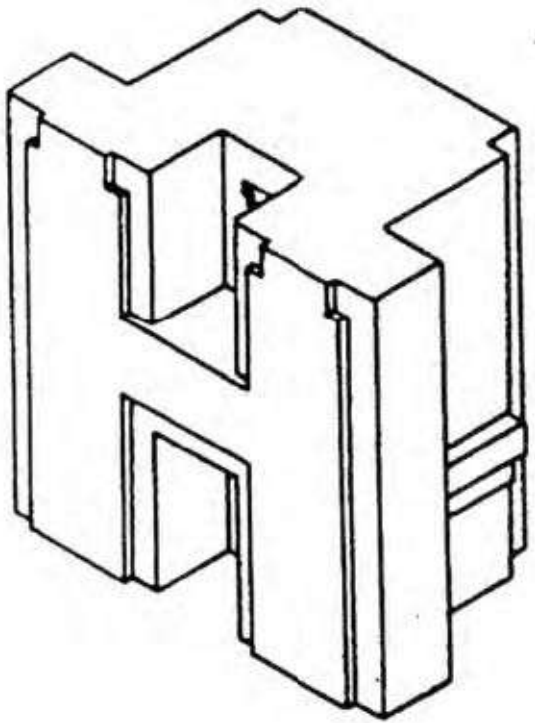
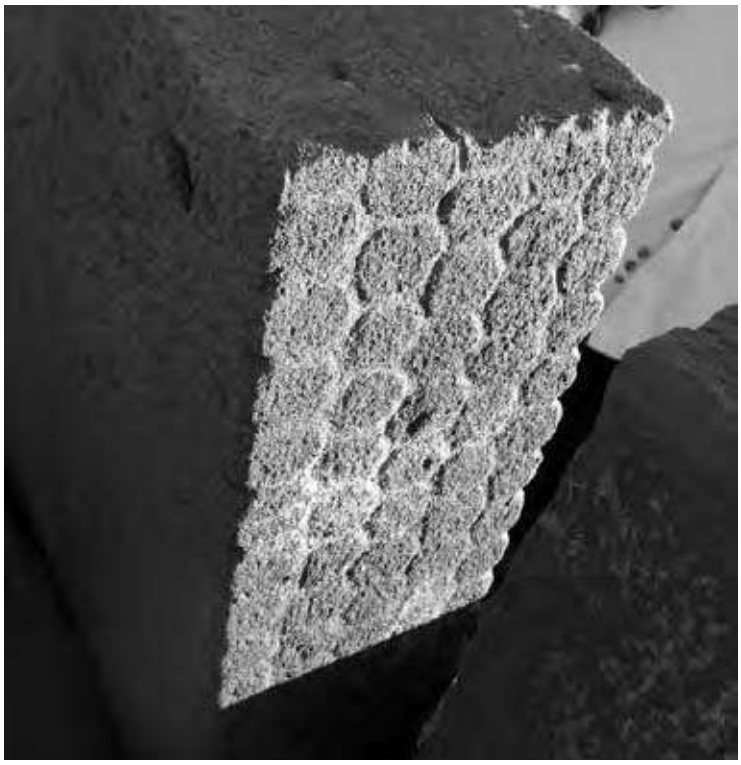


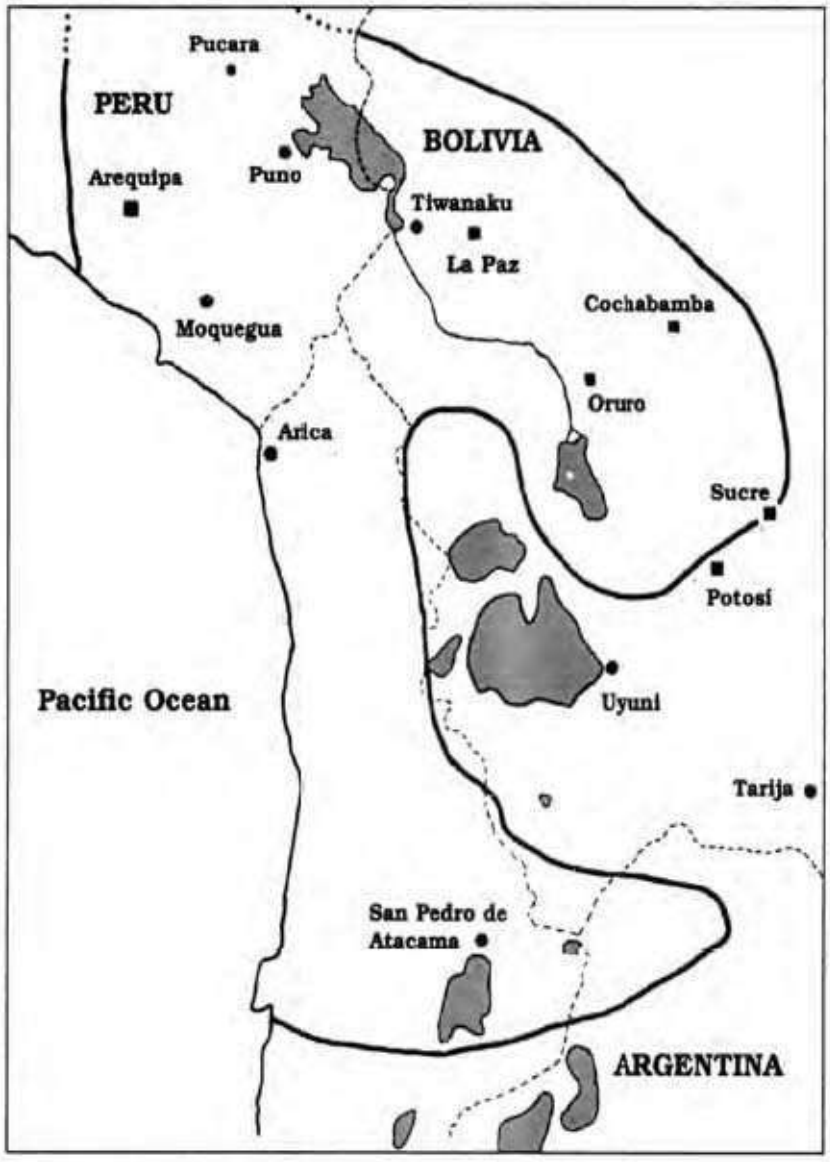
Diagram of one of tthe H-blocks at Puma Punku.

A block at Puma Punku with saw marks and drill holes, apparently done with power tools.

Chris Dunn examines a block at Tiwanku.

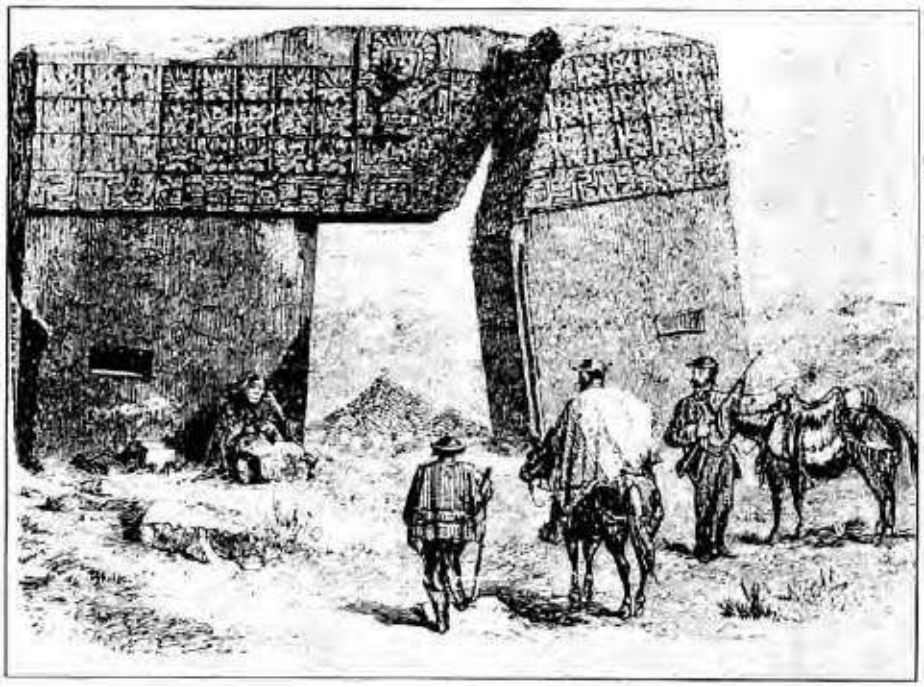


Block at Puma Punku with a difficult to make fishscale pattern on it.



Map of the general area that the Tiwanaku culture is thought to have had an influence over.

Old photo of the monolithic doors at Xerxes' Palace in Persepolis.



Old print of the Gate of the Sun, Squier, 1877.

CHAPTER FOUR

THE SUMERIAN MINING COMPLEX AT TIWANAKU

And he that talked with me had a golden reed to measure the city,
and the gates thereof and the wall thereof.
And he measured the wall thereof,
an hundred and forty and four cubits,
according to the measure of a man, that is of the angel.
—Revelations: 21.15, 17

The next day we gathered in the lobby for a return to Tiwanaku. We found that our ground transportation company had assigned a local tour guide named Erich to accompany us in our minibus. This did not delight our group of World Explorers, as most members felt Erich would add little to our understanding of the sites, and in fact, he might waste our time trying to tell us versions of history we were predisposed not to believe. Happily, this was not at all the case; Erich was full of interesting information, and said he found it refreshing to be with a group with whom he could discuss alternative viewpoints and evidence, and skip the usual tourist drivel. He knew quite a bit about ores and gold mining as well —his father had originally come to Bolivia from Austria as a mining engineer in the 1950s.

Erich told us a couple of very interesting stories. Over lunch Erich revealed that a German-Italian scuba diving expedition called Team Akakor had discovered stone walls and a “gold monolith” at a depth of about 80 feet on the northern side of the Island of the Sun (from which Manco Capac emerged to

found the Inca civilization).

This report seemed fantastic, but Erich also told us of two amazing artifacts we could view for ourselves in La Paz. The Pokotia Monolith and the Magna Fuente Bowl had both been found near Tiwanaku, and both artifacts had Sumerian letters engraved on them! They were now on display at the Museum of Precious Metals (also known as the Gold Museum). As we were leaving Tiwanaku at the end of the day in our minibus, Erich pointed to a pyramidical mound a kilometer or two on the other side of the main highway, to the west.

"Over there is a village and that hill is actually a pyramid," he said. "That is where the Pokotia statue with the Sumerian writing was found."

"Let's go over there," I said, jumping up to address the driver.

"Well, the people in that village don't like to have visitors," Erich said. "They are doing some private excavating at that pyramid and they don't want to have stangers snooping around."

"Well, let's drive down the road a short distance to get a better view," I compromised.

"Yes, we can do that," he said and told the driver, who looked at us both with a certain amount of puzzlement, to head toward the pyramid and the village in the distance.

"Wow, this is exciting," I said as we headed down the narrow dirt road. At first the looming mound just looked like an ordinary hill, but upon closer examination it appeared more like a pyramid. The surface of its south side showed signs of disturbance, as if some long-term effort to dig into the hill—or pyramid—had been going on for some time. We drove relatively close to the pyramid and village, and it did not seem as if any activity was going on at the moment. Surely, there were people in the village.

We stopped the bus and all of us got out and took some photographs. It was getting late in the afternoon and sun cast a golden ray of light onto the green and brown hill. No obvious stone walls could be seen, but it certainly looked like some sort of archeological excavation was taking place—official or not—and that this was some sort genuine ancient site. And a large one at that!

As we drove away from the village and got back onto the main highway to La Paz, I wondered at this new discovery—it was fantastic! Basically, an undiscovered pyramid has been secretly located within sight of Tiwanaku, and artifacts have come from this site. These artifacts, including the Fuente Magna Bowl from a property nearby, apparently have Sumerian script on them. Both are now in an official government museum in La Paz and are apparently completely authentic. For mainstream archeology—in Bolivia and elsewhere—this is a

historical bombshell of atomic proportions! As our minibus started downhill for the steep descent into La Paz, and the lights of the city began to illuminate the valley, I decided that the first thing we would do in the morning was go to the museum.

The Sumerian Connection to Tiwanaku and Puma Punku

The next day, our team found the Precious Metals Museum on Calle Jaen in the old colonial section of La Paz, and I purchased tickets for the group. Armed guards at the entrance took our tickets and warned us that no photography was permitted in the museum.

The guards stood near the Pokotia Monolith, and therefore, photography of that object was out of the question. However, the Magna Fuente Bowl was in an unguarded room, and I was able to take a few photos of the bowl inside its glass case without being spotted. Cuneiform writing could clearly be seen on the inside rim of the bowl, as well as other writing. When I returned to the museum in November of 2011 with the crew of the History Channel's *Ancient Aliens* show, the Pokotia statue was being kept in a special vault out of the public's view. During our visit they brought the statue out of the special vault and allowed it to be filmed for the show. I encourage readers to look for this special episode of *Ancient Aliens* as it is the only television documentary that I know of which features the Pokotia Monolith and the Fuente Magna Bowl.

During the filming of that episode I had the opportunity to scrutinize at the Pokotia Monolith, which is made of red granite and is about three feet high. It is broken in two places and has inscriptions on its side and on its back. Incredibly, they are said to be Sumerian inscriptions thousands of years old.

According to Wikipedia, one of the few Internet sites with information on the two unusual objects:

> The Pokotia Monolith is a stone statue excavated from the pre-Incan site of Pokotia, six km from Tiwanaku in Bolivia. In December 2001 inscriptions and patterns on the front and back of the statue were photographed by a team led by the Bolivian archeologist Bernardo Biados. Photos of the statue show a worn male figure standing upright with his arms at his sides. It appears to be partly clothed, with a loincloth-like garment, armbands and possibly a circlet or headdress. The face is almost entirely eroded away. There are rib-like lines on the chest. The statue is broken at the feet and at the neck. The symbols are found on the front of the legs, below the hands and on the right and left thighs.

More are found back of the statue.

The Fuente Magna Bowl is made of earthen-brown fired ceramic which is beautifully engraved both inside and out with anthropomorphic characters, zoological motifs and several scripts, including what is obviously cuneiform. The script apparently comes from 3500 to 3000 BC, the Sumerian/Akkadian period. The Fuente Magna Bowl is now called the “Rosetta Stone of the Americas” because the two languages on the bowl are apparently Sumerian and the local Aymara language; the two appear to be related, with the local dialect apparently derived from Sumerian. The bowl is said to have been found in the 1950s by a worker doing digs in the vicinity of Tiwanaku.

The Fuente Magna Bowl at the Museum of Precious Metals in La Paz.

The Fuente Magna Bowl was discovered on the property of the Manjon family, located somewhere near Tiwanaku. The area had not been subject to any archeological investigation up to that time, and probably very little since. Around 1959 a Bolivian archeologist, don Max Portugal-Zamora, learned of the existence of the bowl from a local priest named Pastor Manjon. They named the site *Fuente Magna* (Great Fountain).

The Pokotia Monolith.

Through the mediation and negotiation of General Armando Escobar Uria, the property was swapped for another parcel in the neighborhood of Sopocachi. Now safely under the protection of the honorable, municipal mayoralty, Mr. Portugal-Zamora began to restore the bowl by applying cement to the parts that showed chipping and deterioration. He apparently did not recognize the cuneiform script on the bowl, and thought it was some kind of unique indigenous writing, something akin to the Rongo Rongo writing of Easter Island. For unknown reasons, the bowl remained an obscure artifact and, while it seems to have been in La Paz for many decades, it wasn't until 2002 that it resurfaced. This was the year that the Pokotia Monolith was being studied, and the writing on its side rekindled interest in the bowl. Both were put in the newly formed Museum of Precious Metals sometime around 2007.

Archeologists in Bolivia seemed to have no doubts as to the authenticity of both objects, and so the race was on to decipher the scripts. Dr. Alberto Marini analyzed the script on the Fuente Magna Bowl and reported that it was Sumerian. Then, ancient language expert Dr. Clyde A. Winters determined that the writing on the bowl was probably Proto-Sumerian, which is a script found on

many artifacts from Mesopotamia. Winters said that an identical script was used by the Elamites, and called Proto-Elamite.

Maximiliano, whose family sold the Fuente Magna Bowl.

Dr. Winters said he compared the writing to the Libyco-Berber writing used in the Sahara 5,000 years ago. He claimed that this writing was used by the Proto-Dravidians (of the Indus Valley), Proto-Mande, Proto-Elamites and Proto-Sumerians.

As noted, he found that the Fuente Magna inscriptions are in the Proto-Sumerian script, and the symbols have several Proto-Sumerian signs joined together to represent words and sentences. Below is Winters' transliteration of the inscriptions on the right side of the Fuente Magna, reading from top to bottom and right to left:

1. *Pa ge gi*
2. *Mi lu du*
3. *I mi ki*
4. *me su du*
5. *Nia po*
6. *Pa*
7. *Mash*
8. *Nia mi*
9. *Du lu gi*
10. *Ka me lu*
11. *Zi*

12. *Nan na pa-I*

Winters then gave the following translation:

"(1) Girls take an oath to act justly (this) place. (2) (This is) a favorable oracle of the people. (3) Send forth a just divine decree. (4) The charm (the Fuente Magna) (is) full of Good. (5) The (Goddess) Nia is pure. (6) Take an oath (to her). (7) The Diviner. (8) The divine decree of Nia (is), (9) to surround the people with Goodness/Gladness. (10) Value the people's oracle. (11) The soul (to), (12) appear as a witness to the (Good that comes from faith in the Goddess Nia before) all mankind."

The transliteration of the inscriptions on the left side of the Fuente Magna is as follows:

1. *Tu ki a mash pa*
2a. Lu me lu ki mi
2b. Pa be ge
3. Zi
4. lu na
5. ge
6. du po
7. I tu po
8. lu mi du

This section was translated by Winters as:

> "(1) Make a libation (this) place for water (seminal fluid?) and seek virtue. (2a) (This is) a great amulet/charm, (2b) (this) place of the people is a phenomenal area of the deity (Nia's) power. (3) The soul (or breath of life). (4) Much incense, (5) to justly, (6) make the pure libation. (7) Capture the pure libation (/or Appear (here) as a witness to the pure libation). (8) Divine good in this phenomenal proximity of the deity's power."

Winters says that the decipherment of the inscriptions on the Fuente Magna Bowl indicates that it was used to make libations to the Goddess Nia to request fertility. Plus, it was to offer thanks for the bountiful fauna and flora in the area that made it possible for these Sumerian explorers to support themselves in

Bolivia.

Winters then turned his attention to the Pokotia Monolith. He says that the signs used to write the messages on the monolith were non-liguture Proto-Sumerian symbols. He deciphers the inscription under the hand on the Pokotia figure as saying:

> "The oracle Putaki conducts man to truth. (This) esteemed (and) precious oracle to sprout esteem, (now) witness (its) escape."

Winters' decipherment of the Proto-Sumerian inscription on the back of the statue is as follows:

> "Proclaim the establishment of character. The strong father (Putaki) to send forth the divination. Strong wisdom (in this) phenomenal area of the deity's power. Capture the speech (of the oracle). (The oracle is) very strong to benefit (and) nourish the sprouting (of) character. Tell human being(s) (the oracle's) benefit. The oracle to open (up) much (benefit for all). The ideal norm (is the) oracle (of Putaki). (This) oracle is (in) a phenomenal area of the deity's power. Distribute to all humanity (the divine decree). Snare a portion (of the) pure voice. (The oracle to) send forth gladness. Agitate the mouth (of the oracle), to send forth the divination. The diviner speaks good."

Winters comments, "The writing on the Pokotia monument makes it clear that the Pokotia oracle was heard by many people in ancient Bolivia. This is interesting because the Pachacamac oracle was very popular in this area in historic times…. satellite shrines of one or another of his offspring were worshipped by South Americans. During Inca (Sumerian: *En-ka=Enki=*"*Great* Lord") times, the temple city of Pachacamac, contained the idol of Pachacamac which was a commanding oracle drawing devotees from Ecuador in the North through Bolivia in the South. People came from far and wide for a Pachacamac prophecy." (clyde.winters.tripod.com)

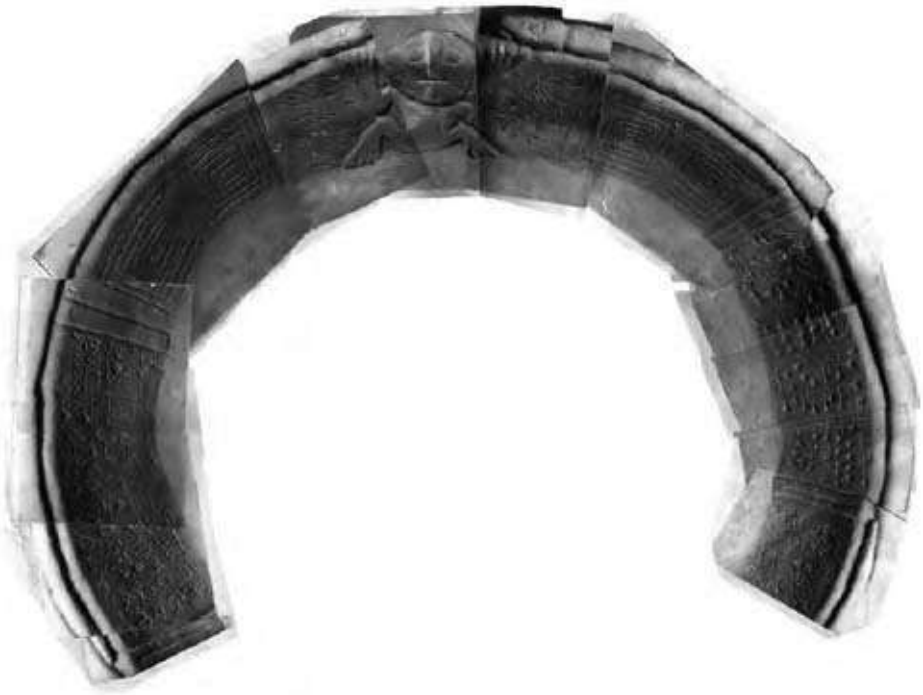
Script on the Pokotia Monolith.

Winters is a diffusionist in the manner of Harvard scholar Barry Fell, a native of New Zealand who maintained that many ancient cultures were travelling around the world many thousands of years ago, including ancient Sumerians, Chinese, Africans, Hindus, Europeans and others. Like such archeologists as Thor Heyerdahl before him, Fell maintained that the world's oceans were not barriers, but highways. The easy way for wandering tribes to colonize faraway lands was via boat, rather than by walking everywhere.

The figure on the opposite side of the writing on the Fuente Magna Bowl.

Barry Fell wrote a number of influential books on the transoceanic voyages of ancient peoples including *America B.C.*, *Saga America*[34] and others. He

particularly dwelt on the scientific translation of ancient texts, typically quite short, that appeared on stones, walls, amulets, coins, statues and other objects discovered in the Americas that mainstream archeologists simply ignore. The list is a long one and too much to discuss in this book, but suffice it to say that Fell was an expert at ancient scripts and languages and made some astonishing links between many African, Mediterranean, European and Asian inscriptions in his books. Fell, who died in 1994, would have been fascinated by the Sumerian writing—of two different kinds—at Tiwanaku and would no doubt have thought it was authentic. It is exciting that both objects reside in the important Precious Metals Museum and their authenticity cannot be easily denounced. Indeed, this is the crux of the matter, as far as the cutting edge of Bolivian and South American archeology is concerned. What does this all mean?



The Fuente Magna Bowl with the cuneiform writing on the right side.

It means that either these objects are genuine artifacts from the vicinity of Tiwanaku, or else they are elaborate fakes that have been perpetrated on the Bolivian archeological authorities in an effort to promote—what? That Sumerians came to Tiwanaku and therefore—what? Is there some conspiracy here to promote some hidden agenda? What would it be? It seems like an odd scenario to promote anyway. It seems extremely unlikely that someone concocted a scheme to plant fake Sumerian artifacts around Tiwanaku for fun or profit. The fact that the Magna Fuente Bowl sat in some museum basement,

largely forgotten for decades, attests to the fact that no market was being developed for pseudo-Sumerian antiquities.

Unfortunately, the mainstream archeologists are faced with a paradox that may ultimately knock them out of their ivory towers. Either the objects now at the Precious Metals Museum in La Paz are bizarre fakes or they are real. If they are real, everything that the professors have been telling us for the past 60 years is largely false, and the dating of the surrounding ruins, including Tiwanaku and Puma Punku, are wildly off. Perhaps they will at least be forced to conclude that the Sumerians came to the Altiplano circa 3000 BC and built some structures, including pyramids, and later, around 200 AD, another culture came along and built Tiwanaku.

Proto-Sumerian writing on the Fuente Magna Bowl.

Any way you look at it, the Fuente Magna Bowl and the Pokotia Monolith are a problem for the mainstream archeologists who are trying to assign cultures and dates to the ruins of Tiwanaku and Puma Punku. It would appear that they, like Posnansky, have gotten it all wrong. How could they have made such a massive and drastic mistake? Will they suddenly change their minds, have a big press conference in La Paz and announce that Tiwanaku is associated with Sumerians nearly 5,000 years ago? This seems unlikely. Most probably,

mainstream archeologists in the United States, Canada and Europe will stand by the relatively recent dates they have given Tiwanaku and Puma Punku and completely ignore the evidence—sitting in a museum in La Paz—that these sites are much older and somehow associated with the Sumerians. But maybe a new crop of Bolivian archeologists, who are just now realizing the astonishing truth of these ancient sites, will have the integrity and strength to stand by their convictions. Bolivia has always been a country that has marched to a different drummer from other countries around it.

So why has the mainstream gotten the dating so terribly wrong at Tiwanaku and Puma Punku? The reason is simple: archeologists continually make assumptions about archeological sites because of a lack of scientific facts. In the case of stone monuments, the problem is compounded by the fact that at this point in time it is impossible to date when a stone block has been cut and erected.

Script on the Pokotia Monolith.

It helps if the stone block or structure in question has an inscription and date cut into it, however, even this does not conclusively prove when the structure was erected. It only proves that the structure was there when the inscription was made, so that makes the structure at least that old, though it could be older.

It is well known to archeologists that structures already in place have been claimed by later generations. Egyptologists are well aware that this sort of thing went on in ancient Egypt for thousands of years, with new pharaohs literally erasing the name of an old pharaoh whose inscription appeared on a monument, and putting their own name on it. They simply made a claim to a gigantic, nearly indestructible, monument that was already there.

Such reclaiming of large, monumental stone objects has probably happened all over the world. The very nature of megalithic structures, whether statues, obelisks, temples or pyramids, is that they are built to last for thousands of years, and in many cases they do. During the eons that these structures are standing, a continuous wave of humanity has lived in their proximity—even turning them into their own temples and homes—without knowing who actually built them. We see this at Carnac in Brittany, France, where rows of menhirs have stood for thousands of years and archeologists have no idea who erected them or why. But they do know that successive waves of people also used the menhirs, and early Christians even recarved some of them into monumental Christian crosses. But in this case, archeologists realize that the early Christians did not erect these stones, but merely altered them for their own purposes. It is known that the Druids used Stonehenge for hundreds or even thousands of years for their ceremonies—but they did not necessarily erect the megaliths there. Archeologists continue to debate how old Stonehenge is, who built it and why. A similar case can easily be made for Tiwanaku and Puma Punku.

The way archeological sites are often dated is to find some organic material or pottery within the site, and then date this object using the carbon-14 dating technique, or thermoluminescence dating in the case of pottery. While these dating techniques are fairly reliable, what is not reliable is whether the pieces of bone, wood, fabric or pottery being dated are from the time of the building of the stone structure in which they were found. This is where assumption comes into play, and archeologists often “assume” that these objects are from the time of the creation of the structure, even though they could have been placed there many hundreds or even thousands of years later.

An example of how very wrong one can be in this regard involved Yale archeologist Robert Suggs. While doing studies of the huge basalt platforms in the Marquesas Islands in the early 1950s, he discovered such clearly datable

items as a French brandy bottle and an American Civil War musket within one of the megalithic structures. He then “assumed” that these items had been placed there at the time of the structures’ building and therefore “dated” the structures as being built circa 1865. Ironically, the American author Herman Melville had seen the same platforms in 1842 and wrote about them in his 1846 book *Typee: A Peep at Polynesian Life.* In that book the natives told him that they did not know who had built the walls and considered them to have been built by giants at the beginning of the world. Suggs later revised his dating of the megalithic platforms, realizing his error, and said that their construction was between 1400 AD and 1700 AD.

Close-up of the cuneiform writing on the Fuente Magna Bowl.

How many other sites have been erroneously dated this way? The problem with archeological sites that are thousands of years old is that these sites would have had local people—or even pilgrims—using these sites year after year for thousands of years. They could have, and would have, left all kinds of traces of their presence including ceramics, the remains of ancient bonfires and festivals and even the remains of houses that were built out of the rubble of the surrounding ruins. Are archeologists dating the trash of people who came to Tiwanaku hundreds of years after it was already in ruins? It is entirely possible, but archeologists rarely take this form of self speculation.

Script on the Pokotia Monolith.

One would think that some of the ceramics in the Tiwanaku Museum could be dated by thermoluminescence, or even the Fuente Magna Bowl itself. To my knowledge this has not been done, largely because of a lack of interest and a lack of funds.

The Home of the Gods

Some authors have claimed, often partially based on linguistics and comparative art, that the Sumerians, Phoenicians, Indus Valley Hindus, Egyptians and others came to South America in search of metals, hallucinogenic plants and other precious items.

One important book along these lines is *The God-Kings and the Titans* written by British historian James Bailey in 1973.[54] Bailey compares a great number of Old World and New World customs and artifacts such as pan pipes, gorgon heads, myths and construction techniques, and finds them to be identical. Bailey says that the Odyssey saga of Ulysses is a map-guide to the tin mines of Lake Titicaca. Bailey maintains that scholars still have no explanation as to where the huge amount of tin originated that enabled the Bronze Age to happen in the Middle East. He says that it came from Tiwanaku and the area around Lake Titicaca. Mythologists have tried to identify Ulysses' route by looking at sites around the Mediterranean, but on item after item, Bailey finds very interesting correspondences to what would have occurred on a boat trip from the

Mediterranean to South America and concludes that the Odyssey was a transatlantic voyage to Brazil and then up the Rio La Plata to Bolivia, where the last part of the journey would have been conducted on foot.

The pyramid-hill near Tiwanaku where the Pokotia MonoUth was discovered.

Another archeologist who came to much the same conclusion as Bailey is the American history professor Hugh Fox of Michigan State University. In his book *The Home of the Gods*,[55] Fox maintains that a Sumerian-Phoenician-Indus Valley collection of sea-kings crossed both the Pacific and the Atlantic in order to reach the rich tin mines of South America, particularly around Lake Titicaca. In addition, Fox says that the area around Tiwanaku and Lake Titicaca corresponds to the landscape of the classical Hindu myth of Mount Meru, the "Home of the Gods" and that this "mythical" Hindu mountain is Tiwanaku. He also claims that the language of the Incas is related to Sanskrit, and that ancient Sumerian words are used around Lake Titicaca, including "Anaku" which he says is the Sumerian name for "Tin Lands."

Fox says that he was influenced by James Bailey, and in his book quotes Bailey discussing *Book III* of the *Argonautica* (which is the famous story of Jason and the Golden Fleece):

> They passed from the ship beyond the reeds and the water to dry land [and] came from the plain to the palace of Aeetes and they stood marveling at the entrance to the King's Court and the wide gates and columns which rose in ordered lines round the walls and, high up on the palace, a coping of stone rested on triglyphs. And here an inner court was built and round it were many well-fitted doors and chambers and all along each side was a richly wrought gallery. And on both sides loftier buildings stood obliquely…[54, 55]

Fox also discusses the Sumerian Gilgamesh story which he says describes a voyage across the ocean to Anaku, the Tin Lands, in search of a spiny thorn-apple that makes old men young again. This "apple" of eternal youth, Fox says, is representative of psychedelic drugs such as San Pedro cactus and ayahuascar.

Fox also highlights another episode in the *Argonautica* where Jason and the Argonauts arrive at the land of the Sun King and Jason is given a series of tasks to perform. One of them is to harness two fiery bulls and plow a field with them. These "bulls" are ovens or metal forges, with "feet of bronze and bronze mouths from which the breath came out in flame."[55]

Twins are part of the story of the land of Anaku, and Fox theorizes that the twins, including the two bulls breathing fire, are allegories for two different metals, tin and copper, which when mixed in the fire-breathing oven become the important final product, bronze. In Greek, he says, the twins are referred to as "anakes" which to him is a metaphor for this combining of the two metals. Gilgamesh was making his voyage to "Anaku" the land of tin—the "twins." Fox gives us this brief table:

Anakes—a Greek name for "The Twins."

Anaku—Sumerian name for the Tin Lands Tiwanaku—The ancient House of the Sun in Bolivia right in the middle of tin country

Fox points out that the bronze twins (anakes) go to the ovens in the Tin Lands (Anaku) in order to be smelted. He says that metallurgy was "magic" and the metal worker himself was thought to be a magician who made chemical magic by marrying "the earth and the sky" or "twins," since an explanation of mineralogy and chemistry would have been impossible in the language of the time. The House of the Sun was an amazing complex for creating the bronze that would be the tears of sun. This same bronze was poured into the keystone cuts to create the clamps that held many of the giant blocks of granite together. Most of it, however, was exported, literally around the world!

Fox mentions that the land of Anaku is also spoken of as the home of the Annunaki, the elder gods. We see how part of Tiwanaku is found in the Anaku-Annunaki myths and that the Sumerian sky god, "An," is the King of the Annunaki. The area around Lake Titicaca was where the sky and earth met. Water was found here as well, a great inland sea. Also, Fox mentions the Sumerian words used in the local languages:

Titi-Tata: Father of Tin
Titi Wiyana: Altar of Tin to Adore the Sun Our King
Titi-Kaka/Thithi-Ccotta: Tin-Plated Cup that Contains All the Waters Reunited by the Four Winds of the Intis, Antillis, or Andes

Fox makes the point that the town of Oruru, south of Lake Titicaca, is another Bolivian mining center and derives its name from the Sumerian word "urruru" meaning "to smelt." Says Fox:

> So we have the tin at Tiwanaku/*anaku*, and the smelting at *Oruru/urruru*, although Arthur Posnansky, the great scholar who devoted much of his life to a study of Tiawanaku, was impressed by the size of the heaps of slag he saw at Tiawanaku when he first arrived there. The smelting wasn't all done at Oruru. The epithets connecting Lake Titicaca with charcoal and smelting intimately link the Sun King with intense metallurgical activity and again, the pre-Greek facts that are transformed into Greek myths link Helios [the Sun God] and Acetes, his son, with Hephaistos, the smith of the gods, and the chief architect for the Sun King's palace: Tiawanaku.[55]

Indeed, with the discovery of the Fuente Magna Bowl and the Pokotia Monolith with their Sumerian inscriptions, it becomes clear that there is indeed some Sumerian connection with Lake Titicaca and the megalithic ruins found there. But if that is the case, then the building of these complexes and their use as smelting/mining/ ceremonial centers must have been thousands of years earlier than the present-day researchers have concluded. A storm is definitely brewing on the horizon of the Tiwanaku culture. The Great Lords, the En-Ka of the Sumerians, have yet to divulge all of their secrets to modern man.

The Quest for Metals

Back at our hotel in La Paz, I marveled at the new things I was learning about Tiwanaku. With the discovery of the Fuente Magna Bowl and the Pokotia

Monolith, we can now get a fairly accurate idea of who built Tiwanaku and when. We are also getting a better idea of what Tiwanaku was for. However, many enigmas remain, and the discovery of a Sumerian influence at Tiwanaku leads us to wonder: did the Sumerians have the kind of technology that was required to cut, shape, move and build with the gigantic blocks that are found at the site? Given the record-holding ashlars at Baalbek and the astonishing doors of Xerxes' Palace, it is clear that somebody in that area knew how to work megaliths.

What the evidence suggests is that that Tiwanaku is over 5,000 years old, dating to circa 3500-3000 BC. It was built as an ore processing plant, extracting metals from the ore that was brought to Tiwanaku from the surrounding mountains. At Tiwanaku, metal workers created molten metals of various types, from pure gold to alloys like bronze. At the museum recently built at the site, a number of the bronze clamps from keystone cuts of the double-T shape can be seen, as well as gold and other metal artifacts. As noted above, even platinum, which requires a high melting point, has been found in South America, indicating some highly sophisticated metallurgical techniques.

It is interesting to speculate that mercury may have been produced by the complex at Tiwanaku as well. Perhaps the "tears of the Sun" actually represented the liquid metal that was highly valued by the ancients, though we do not know why. Mercury has been found in sealed Mayan bowls at Lake Atitlan in Guatemala, and we have already discussed mercury in the tomb of the ancient Chinese emperor Chi Huang-Ti.

Mercury is derived from the mineral cinnabar, which is a Greek word that is thought to be derived ultimately from Persian and Sanskrit. Cinnabar is a red crystal associated with volcanic activity; it can be crushed and smelted to extract mercury, also known as quicksilver. Pure mercury separates from sulfur in a rotary kiln and easily evaporates. This creates a mercury vapor, and a "condensing column" is used to collect the liquid metal, which in Greek and Roman times was most often transported in iron flasks. Ceramic vessels can also be used to hold the liquid metal and this was common in China and the Americas.

The major cinnabar-mercury deposits of South America are near the town known as Huancavelica in Peru, northwest of Lake Titicaca. Huancavelica was known in pre-Inca times as the area of "Wankas." The Spanish took note of the area early in the conquest and founded the city of Huancavelica in 1572. The mines had been shown to the conquistador Jeronimo Luis de Cabrera in 1564 by the Indian Nahuincopa, who was his servant. Huancavelica became the main

source for mercury in all of Spanish America, including all of Central America and Mexico. Mercury is often used to extract silver or gold from ores and the mercury from Huancavelica was used in the extraction of silver from the very important mines at Potosi, just south of Lake Titicaca.

This area was known as “Alto Peru” in colonial times. The Potosi mines and their silver were the single most important source of wealth for the Spanish in colonial America and it was the mercury from Huancavelica that made it possible. After the conquest, the entire world was flooded with Spanish “pieces of eight,” the Spanish doubloon made of Potosi silver.

So, the question is: was the cinnabar and mercury from Huancavelica exploited in ancient times by the early megalith builders at Tiwanaku and possibly Chavin? Activity is known to go back to at least 1400 BC. If not these mines of cinnabar, then perhaps some other mines now exhausted or undiscovered were the source?

As previously noted, mercury is mentioned in the ancient vimana texts in Sanskrit, texts that talk about ancient flying vehicles and other high tech devices, including weapons. Mercury was apparently a part of the vortex technology that powered the vimana aircraft. Mercury is also said to have been behind the Nazi “foo fighter” technology that produced glowing, pulsing globes that appeared to be some sort of flying gyro. Foo fighters were used in the final days of WWII by the Germans as a last ditch defense against the squadrons of Allied bombers that were flying over Germany at the time. The Germans had hoped that swarms of pulsing foo fighters emitting an electromagnetic field would interfere with the electrical systems of the bombers. Though it didn’t work on a large scale, the foo fighters caused some RAF pilots to return home before dropping their ordnance. It is thought that modified versions of foo fighters were used as the plasma-gyro engines in the experimental designs of flying disks that the Germans were starting to develop.

As I will continue to mention, the people building the amazing South American complexes—Sumerian Annunaki, or whomever— must have had power tools to do some of the things they did, and we still don’t know how the largest blocks of stone at Puma Punku, Tiwanaku, Chavin, Sacsayhuaman or Ollantaytambo were moved. If these people had electricity, giant saws and equipment to move very large blocks, did they have flight as well? Ancient legends say that they did. They were the Birdmen who are depicted around the world, including on the Gate of the Sun at Tiwanaku.

The City of the Sun and the Voyage Across the Pacific

Were Tiwanaku and Puma Punku the Mount Meru of the ancient Hindus and the City of the Sun of the ancient Sumerians and Greeks? Mainstream archeologists are baffled as to why such a sophisticated city was built here on the southern shores of Lake Titicaca. Was it just a cult center? Who were these geniuses and what were they after?

We know now that they included Sumerians. Indus Valley Hindus probably began voyaging into the Indian Ocean, Persian Gulf and Western Pacific at a very early date. A descendant of these people, the "Phoenicians of the Pacific," were the Cham people of Southeast Asia. These Hindu-Buddhist megalithic people, who also used the curious T-shaped keystone cuts and clamps, were found in Malaysia, Indonesia, Thailand, Laos, Cambodia (Cham-Bodia) and Vietnam. As mentioned above, their capital was Cham Island off the coast of Danang, Vietnam. Megalithic complexes like Borobadur in central Java are associated with the Cham, who built several megalithic stone temples throughout the region.

This amazing group of Hindu-Buddhists made excellent granite and basalt statues of Shiva and Buddha. I think the Cham traveled from Southeast Asia past the Philippines and New Guinea into the vast Pacific Ocean where they made their way to Tonga, Tahiti, the Marquesas and finally the Americas. The way back was to go south to Peru and return via Easter Island and Rarotonga, back to Fiji and the Solomon Islands. It was a long voyage, but Polynesians had made such long trips many times before. Vikings, Phoenicians, Chinese, Micronesians, Portuguese, Basques, Egyptians and others were to make many such long journeys to the Americas before Columbus.

Oceans are highways, not barriers, as I have pointed out. The easy way to go someplace far away is to go by water, not to walk there. The idea that all native Americans had to have walked to the two continents of North and South America is absurd. People have been using boats for over 30,000 years as archeologists freely admit. And they could easily have made their way along the coasts of all the continents, including Antarctica, in the remote past.

Seafaring is a natural activity of human beings, who are uniquely aquatic and land mammals at the same time. Even in the most fierce weather of the remote sea passages at the poles, mankind is able to adapt himself to the ocean. He can catch rainwater, fish for himself and conduct a mini-village on board his large ship. Most ocean going ships in ancient times held up to 300 people, such as the Tongaraki canoes of Tonga. Some Chinese ships held 800 people or more.

I hold that Tiwanaku, Puma Punku and possibly some sunken cities in Lake Titicaca, were part of an early transoceanic quest for metals that culminated in

the creation of a huge metallurgical plant and ceremonial city that processed metals from around the lake. According to my theory, many mines were located in the large region in all directions from Lake Titicaca. There were stone quarry sites as well. Megalithic towers like those at Sillustani were built around this time.

Ore came by boat to the foundries and agricultural towns connected to the lake by a series of canals. At Puma Punku and Tiwanaku there were stone-lined canals, and even pyramids with lakes at the top, to provide hydraulic pressure on the ores to wash them and prepare them for the furnaces. Here high temperatures had to be generated to melt the ores and create the molten metals, the “tears of the sun.” These metals were copper, tin, silver and bronze. Iron must have been smelted as well, and it seems that only steel tools—combined with power in the form of electricity—could have made some of these articulated megaliths.

Old photo of the Gate of the Sun.

A giant, high tech, megalithic and nearly indestructible complex was made that included the diverting of the Tiwanaku River to feed the washing process of the ore to the now vanished metallurgical forges that once existed at Tiwanaku and Puma Punku. Other sites were part of the network and were spread out around Lake Titicaca, including Sillustani, Cutimbo, Cuzco, Pisac, Ollantaytambo and Machu Picchu.

I believe that on a basic level, this network was an outpost of the metallurgical masterminds of Armenia, Kurdistan and Sumeria circa 3000 BC. They crossed the Pacific and Atlantic with their ships based in both the Mediterranean and the Persian Gulf. They brought with them iron tools and simple electric devices to power mechanical saws and drills.

On a more sophisticated level, they came with much more. They came with knowledge of mechanical machines and computers. They were interested in

creating a huge stone factory that had to be situated near a source of large stones. In the case of Machu Picchu there are granite outcroppings in the immediate vicinity, which is naturally advantageous.

I think they had airships and portable power plants. They knew about rotating magnetic fields being the source of AC power (same as we currently use)—and set up hydroelectric or wave stations to generate a large amount of power. In the most advanced level of this theory, they had ways to send power via microwaves to satellites and then redirect them to the remote parts of the earth as a form of usable power.

They had airships that could fly great distances that are described in the ancient Hindu and Buddhist epics. They are known as vimanas. They had aerial vehicles to take passengers from one town to another. They were capable of aerial warfare as well, with weapons and defensive tactics. These airships could presumably take cargo.

Most of the cargo would go by ship, just as most cargo is moved in today's modern age. This cargo would be ingots and other forms of precious metals. Other cargo would be psychedelic mushrooms (dried or suspended in honey) and other precious substances.

But the bringers of this high technology, who were they? Where did this high technology start? Were the Annunaki of Sumeria, founders of their science and civilization, extraterrestrials from another planet as has been suggested by such controversial authors as Zechariah Sitchin and Eric von Daniken? While Sitchin maintained that these ancient aliens were from a planet on an elliptical orbit often at the far reaches of our solar system—that returned every several hundred years—von Daniken postulated that they were from another star system and were in continual contact with mankind. This is an important difference.

It would seem that any alien presence would be ongoing and not limited to periods every few hundreds of years. However, the giants of ancient texts—the Annunaki of Sumerian texts and the Nefilim of the Book of *Genesis*—could be a special group of humans, ones who practiced cranial deformation, who had use of an earlier technology from ancient India or even the semi-mythical Atlantis.

An old photo of Tiwanaku from the French expedtion, 1903.

Theories of Tiwanaku as an Ancient Seaport

Tiwanaku appeared to early archeologists to have been a port city—or as modern archeologists prefer, a canal city—with moats around it. Early researchers saw an obvious connection to Lake Titicaca, the only nearby body of water, almost 20 kilometers distant. They believed there was evidence for piers and wharves and at some places, long, straight calcium deposits indicated prehistoric water lines, but they are slanted and no longer lie on a horizontal plane. There are millions of seashells in the area, as well. Lake Titicaca itself was at one time a saltwater inland sea that became freshwater over time. Lake Nicaragua in Central America did exactly the same thing. The fossilized shorelines of the area are also dramatically tilted. Abundant sea life still thrives in Lake Titicaca, instilling a presumption that it was once part of the ocean. In some pre-cataclysmic past, was Lake Titicaca at sea level with a seaport of giant blocks of stone? Some early mystics and cataclysmic archeologist types thought exactly that.

In the 1800s, a controversial French anthropologist named Augustus le Plongeon visited Tiwanaku and observed a strata of seashells, which hinted that the site had once been at sea level. (I found a fossilized trilobite myself while we explored the ruins.) British Colonel James Churchward used the argument that Tiwanaku is a former port city as a major piece of his evidence for the lost continent of Mu or Lemuria.[48]

An old photo of Tiwanaku from the French expedtion, 1903.

The great South American explorer Colonel Percy Fawcett, a Theosophist who believed in Atlantis and lost continents, said at the turn of the last century, “These megalithic ruins of Tiwanaku were never built on the Andes at all. They are part of a great city submerged ages ago in the Pacific Ocean. When the crust of the earth upheaved and created the great Andean Cordilleras, these ruins were elevated from the bed of the ocean to where you now see them.”[65]

Churchward and Fawcett thought that the Amazon basin had once been a huge lake, with the Andes being a vast crescent of mountains that formed what today would be the north, west and southern sides, the eastern side being an outlet into the Amazonian Basin/Atlantic Ocean. The altiplano area was an inland passage through the Andes between the Pacific Ocean and the Atlantic. Churchward even published some fascinating maps depicting this in his book *The Lost Continent of Mu* and subsequent volumes.[50]

While it seems unlikely that that Andes rose up after Tiwanaku was built, there is evidence that Lake Titicaca was once connected to an ocean, in that a unique variety of seahorse resides in the lake. Though they are rarely seen, the Tiwanaku Museum has a specimen of one of the seahorses on display, as well as a ceramic vessel or “fetish” that is clearly in the shape of the seahorse, so the creature was known to the builders of Tiwanaku (or those who may have used the site after the original builders).

The seahorse of Lake Titicaca is clearly a mystery. Seahorses are known to inhabit tropical areas of the world’s oceans, such as the waters around Indonesia, but they are not known to be in freshwater mountain lakes. But they are found at Lake Titicaca, and this would either indicate that the lake was connected to an

ancient ocean containing seahorses, or they were somehow introduced to the high altitude lake of the Andes—a bizarre thought! Why would anyone introduce seahorses to Lake Titicaca?

The possibility that the lake was connected to an ocean at some time in the past is supported by the evidence that it was originally a saltwater lake that contained the seahorses and probably other sea creatures. With fresh water introduced from rainfall and runoff from glaciers atop the mountains all around the lake, it turned slowly into a freshwater lake over many thousands, perhaps millions, of years.

While other sea creatures failed to adapt to the cool, freshwater lake, the seahorses managed to completely adapt to their new high altitude enviroment. The fresh water from Lake Titicaca drained into the very salty Lake Poopo in Bolivia. The saltpans of Uyuni—the largest salt flat in the world at over 4,000 square miles—are nearby. Was this salt a remnant of the salt that was once in Lake Titicaca? It is a distinct possibility!

In his book *Discovering Tiwanaku*[27] Bolivian archeologist Hugo Boero Rojo has a brief but interesting chapter titled "Tiwanku… A Port on Lake Titicaca?" that discusses Arthur Posnansky and his general belief that the city had been on the shores of the lake. Boero Rojo quotes Posnansky on the subject:

> Did the waters of the Lake actually reach the city during the Third Period, when the Tiwanaku culture was at its peak? If this hypothesis would prove correct, it would then be easier to determine the antiquity of the ruins and also to determine the ethnic and social status of the people who built the monuments. In addition to the nearly unanimous opinion of earlier annalists and historians who stated that according to tradition Tiwanaku was on the shores of the Lake or surrounded by water, an assertion which also gives support to the assumption that the waters of the Lake reached the megalithic city during its Second and Third Periods, such hypothesis is further confirmed by the following conclusive and unquestionable reasons.
>
> …On the map, marked "A", on the northern harbor of Tiwanaku, there is a totally symmetrical wharf, built of stone, with an entrance marked "B", for boats to dock and unload their cargo. From the harbor the land slopes down rather steeply towards the north and in the direction where the Lake lies at present; and it can clearly be seen that land was once covered by the waters of the Lake for a long time…

> In the course of later investigations and surveyings, many other such wharves and other constructions have been found around the ruins, particularly very near to Pumapunku, which served as breakwaters, as well as hydraulic works for conducting water to the city. One of these artificial channels, of great extension and width, surrounds the principal part of Tiahuanacu, namely its temples, palaces, fortresses, etc., as it can be seen on the map, and it must probably have served for the same purpose as the water-filled moats around feudal castles in medieval Europe.

Posnansky is using the capital "L" in the word "lake" to denote a greater Lake Titicaca, a much bigger lake than the one we have today. Posnansky's port at Tiwanaku was shown in the map that was printed in his book *Tiwanaku: The Cradle of American Man* as being near the present-day Gate of the Moon. This is not an area much visited by tourists today as it is on the far side of the ruins and in the opposite direction of the more familiar docks at Puma Punku. Evidence gathered in the last 50 years, however, shows that Lake Titicaca was actually lower in ancient times and that the docks at Puma Punku and Tiwanaku are for the extensive canal network and the lake was always some distance away. Says Boero Rojo in his book:

> Certain investigators, such as Uhle, held that the Lake never reached Tiwanaku itself. At present, certain archaeologists believe that the level of the Lake during the Tiwanaku Empire was about the same as it is today, and assume that stones hauled from the Kahapia volcano (60 km in a straight line from Tiwanaku) were unloaded at the port of Iwawe, presently on the shores of Lake Titicaca, and that the stones were then transported from there to Tiwanaku by man-power over a path of wet clay, traces of which have not yet been found.
>
> The hypothesis of the "tired stones" is also controversial: those who favor the idea that Tiwanaku was a port on the Lake Titicaca hold that those stones are there as a consequence of shipwrecks; while those oppose that assumption argue that the "tired stones" could not be hauled any further only due to the lack of traction or impediments of the terrain.[27]

Hugo Boero Rojo goes on to mention the tremendous amount of sediment found around Puma Punku and Tiwanaku that is different from the normal soil.

This would be soil that washed into the canals and covered the docks—but some of this soil seems to come from a large wave that may have been part of some local cataclysm. His mention of the "tired stones" (stones that appear to have been meant to be transported to the site but were left along the way for some reason) is interesting and "tired stones" will come up again in the chapter on Ollantaytambo.

British researcher and author J. M. Allen has promoted the idea of Atlantis having been in Bolivia in several books and a Discovery Channel special. In his 2009 book *Atlantis: Lost Kingdom of the Andes*,[52] he presents evidence of a super-lake in the Altiplano called Lake Tauca, of which Lake Titicaca was only the northern part. After 11,000 BC a tectonic shift largely drained this lake and it became a more shallow "Lake Coipasa." The largest part of this super-lake, Allen argues, was in the Salar de Uyuni and Lake Poopo area to the south of present-day Titicaca. It was in this area that Plato's Atlantis existed, he argues, while Tiwanaku was some sort of satellite city situated north of the main lake—Lake Tuaca or Coipasa—and south of the smaller Lake Titicaca, just where it sits today. Tiwanaku, he says, was destroyed by a giant wave in the same cataclysm that drained Lake Tauca and destroyed the city near Uyuni that he calls "Atlantis."[52] More on Allen's theories on Lake Titicaca and cataclysms in the next chapter.

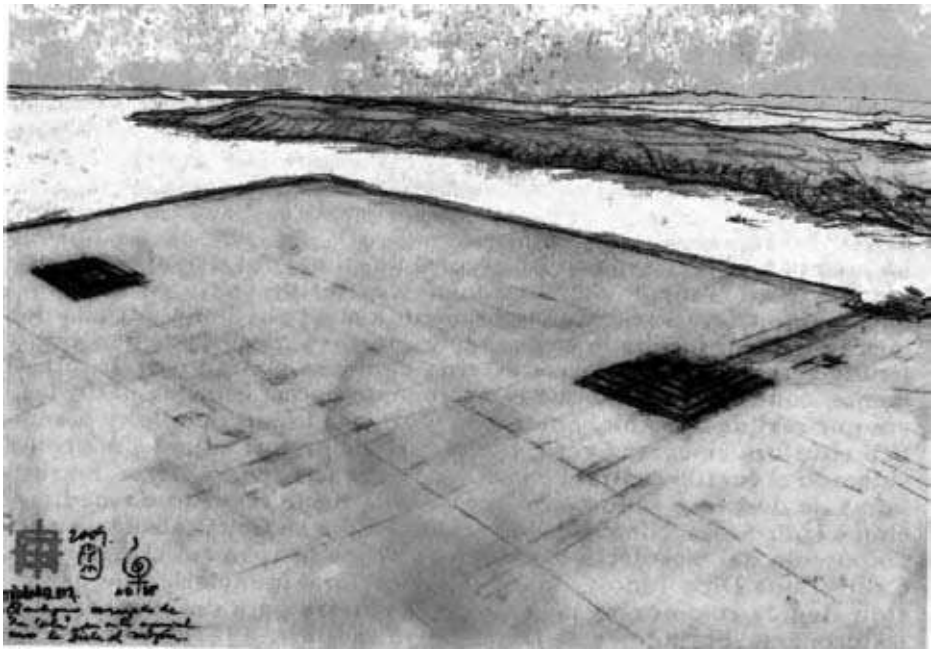
One day, while checking out some bookstores on the central street of La Paz, I came across a book called *El Jardín de los Andes* (The Garden of the Andes) by Ramiro Gonzales[56] and bought it. Sitting in the lobby of the hotel, I had a closer look at it and was quite intrigued. Gonzales was a Bolivian artist and researcher from Cochabamba who had become quite fascinated with the mystique of Lake Titicaca and Tiwanaku. In *El Jardin de los Andes* he puts forward his inspired vision of this entire area as it existed in a pre-poleshift age. The planet is flipped around, and South America and Antarctica are at the North Pole.

Ramiro Gonzales ‘ conceptual drawing of the canals at Tiwanaku.

In Gonzales’ vision, the Andes Mountains are a thin continent with the Altiplano area around Lake Titicaca at approximately sea level. Lake Titicaca is an inland sea in the landmass and is connected to the ocean. Gonzales connects this inland sea with the archeological site of Samaipata, near Cochabamba, and since he is an excellent artist, he displays some great conceptual drawings of the canals and pyramids with the larger sea in the distance. He equates this ancient land to the original Garden of Eden and, like J.M. Allen, the inspiration for Atlantis. This was the early paradise, Gonzales claims, where such nutritious plants as potatoes, maize, bananas and others originated.[56]

Flipping through his book, with its many color pages, I was completely enthralled. While these ideas were all familiar to me, his version and great drawings of his “Garden of Eden” stimulated my imagination. In some ways these places must have looked a bit

like he depicts them. His illustrations made me imagine the huge canals that may have surrounded Tiwanaku and Puma Punku—not just moats. If a large series of canals existed in the area, ones large enough to support extensive reed boat traffic, they would need a source of water like Lake Titicaca and the Andes icecaps to provide the huge volumes of water needed to fill the large network, although they need only be about a meter deep for the reed ships. A whole aquatic biosphere would be created as well.



Ramiro Gonzales' conceptual drawing of the canals at Tiwanaku.

So, the nature of the moats and canals—and how extensive they were—is perhaps the future focus for discussion and research that will take place at the incredible City of the Sun.

The Vast Empire of Tiwanaku

According to the *Tiwanaku Guide: Cultural Patrimony of Humanity*[42] by the Bolivian archeologist Javier Excalante, the ancient site of Tiwanaku was the center of a huge territory:

> Tiwanaku was the capital of a vast empire, which at its peak covered an area of 600,000 km^2. It extended from the northern tropics of Peru, toward the Chilean and Peruvian coasts, and encompassed most of northern and central Argentina.
>
> It was one of the largest pre-Colombian cities of the Americas, characterized by splendid buildings designed by architects and planners who used simple lines to convert the arid Andean Altiplano into a vast metropolis with ostentatious temples and palaces.
>
> Its expert engineers moved enormous blocks of stone, in some cases transporting them from rock quarries 30 km away. Using an amazing amount of skill, they were somehow able to carefully erect buildings over enigmatic astronomical bases, further proof that Tiwanaku had advanced knowledge about engineering.[42]

Indeed, it is this “amazing amount of skill” and “advanced knowledge about engineering” that concerns us within this book. Where did this advanced knowledge come from? How were these people, who supposedly did not know about the wheel, able to move such gigantic blocks of stone? Why would they want to move such large slabs of stone when building with smaller blocks would presumably have been much easier and would have achieved a similar result? Did these builders have iron tools? Did they have power tools, like large saws or power drills? How did they cut and dress these stones? How were they moved 30 kilometers to the site—by sheer force of muscle power, levers and ropes? Archeologists do not have the answers to these questions.

Furthermore, it is assumed that the builders with their “amazing amount of skill” were from the local tribes which include the Aymara, Kola and Wari (Quechua) peoples. Did they develop this astounding skill in rock quarrying and megalithic engineering completely on their own, with little or no contact with other cultures? Mainstream archeologists assure us that this is so. According to them, all American cultures grew up isolated from each other, let alone from farther away cultures in Asia, Europe and Africa. This, we shall see, is a very myopic view of ancient American civilizations.

This concept that, in the Americas at least, ancient civilizations were isolated from each other is summed up well by the American archeologist Richard Diehl in his book *The Olmecs: America’s First Civilization.*[19] Although he is speaking of the Olmecs, who carved and moved gigantic basalt heads weighing up to 20 tons, his remarks might refer to nearly any group in North or South America. Says Diehl:

> There is no evidence that they formed a single unified ethnic group, and almost certainly no Olmec considered people living more than a few hours’ walk away as members of his or her own group. Nevertheless, the numerous independent local cultures were so similar to one another that modern scientists consider them a single generic culture.[6, 19]

So essentially, American archeologists prefer to think that ancient cultures in Mesoamerica were largely unaware of their neighbors, and there was little long-distance trade or cultural exchange. The Olmecs, Mayans, Toltecs and Mixtecs (to name a few) were largely unaware of other cultures around them—and contact with South America was completely unknown. Yet, Bolivian archeologists, proud of the astonishing culture that existed in their country thousands of years ago, believe that the “empire” of Tiwanaku spread from

northern areas of Argentina and Chile to nearly Ecuador. This is much the same territory that is said to be encompassed by the Inca Empire.[42]

That Tiwanaku was a sophisticated state with amazing technology—whatever it was—that either controlled or influenced a very large area seems hard to deny. Indeed, Tiwanaku as a building complex when it was completed and fully functioning must have been an awesome and astounding sight: massive buildings with finely cut walls, much of them covered in gold and other metals; huge pyramids, some of which had lakes at the top of them; tall monolithic statues of strange "kings" with turbans and odd objects in their hands; canals and aqueducts in which water flowed; an assortment of plazas and finely paved roads… a place akin to something out of a fantasy movie.

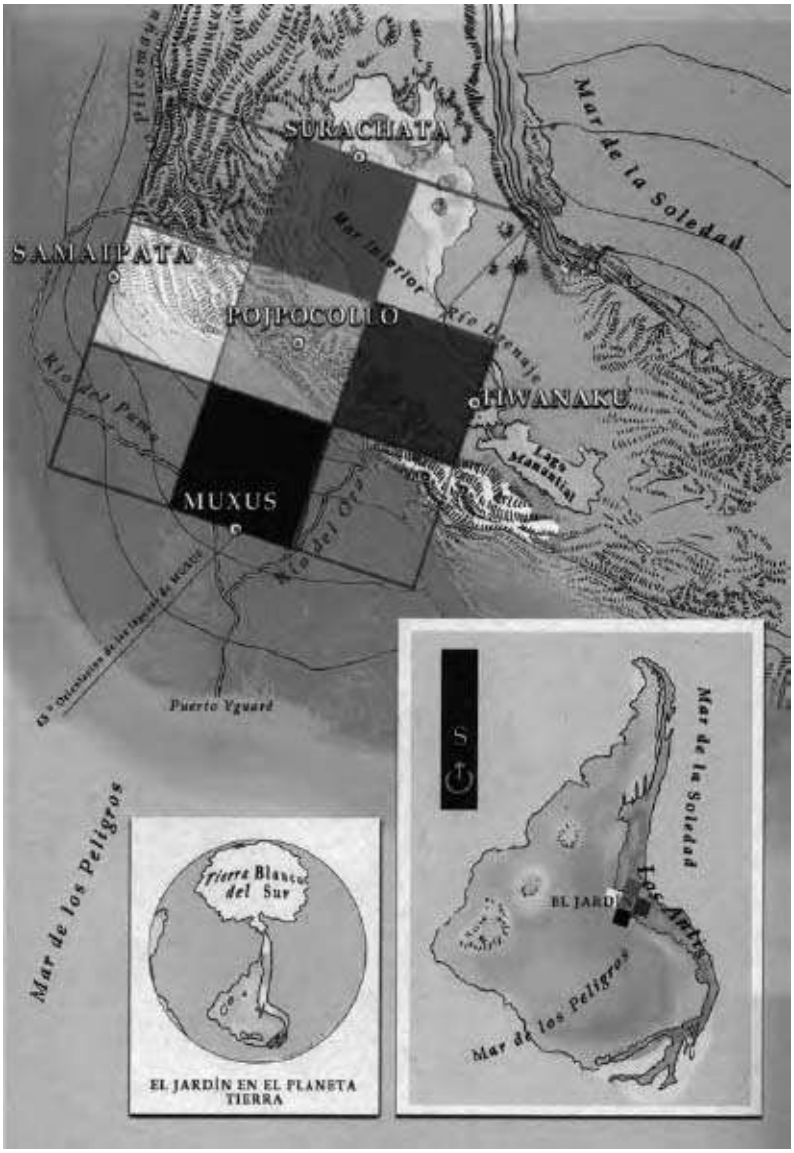
In fact, as architects, engineers and archeologists try to reconstruct the city, they come up with some fantastic and splendid designs! And, as we look at these designs, we realize that these buildings must have looked something like these depictions… and the builders of such structures must have been artistic engineering geniuses by any standard.

We must therefore forgive Bolivian archeologists who promote the glory and extent of the empire of Tiwanaku and its accomplishments. Indeed, these archeologists, educated in Bolivia, can easily see how the chullpas on the northern side of Lake Titicaca were built by the culture of Tiwanaku, and even the buildings in Cuzco, Sacsayhuaman, Ollantaytambo and Machu Picchu might have been built by them. The stonework is almost exactly the same. But Peruvian archeologists will have none of that. Tiwanaku, being in Bolivia and not Peru, cannot be the source of everything Inca. Two very different cultures and timelines need to be maintained.

But who is right? Does it not make sense that the megalith builders of Tiwanaku, or Chavin for that matter, would have attracted traders and visitors from very far afield? This magnificent city, apparently a source of all kinds of metals, including the bronze clamps poured into the keystone cuts, would have been a trading center that would probably have drawn visitors from long distances, including very distant lands. It seems that it was pre-planned in this way.

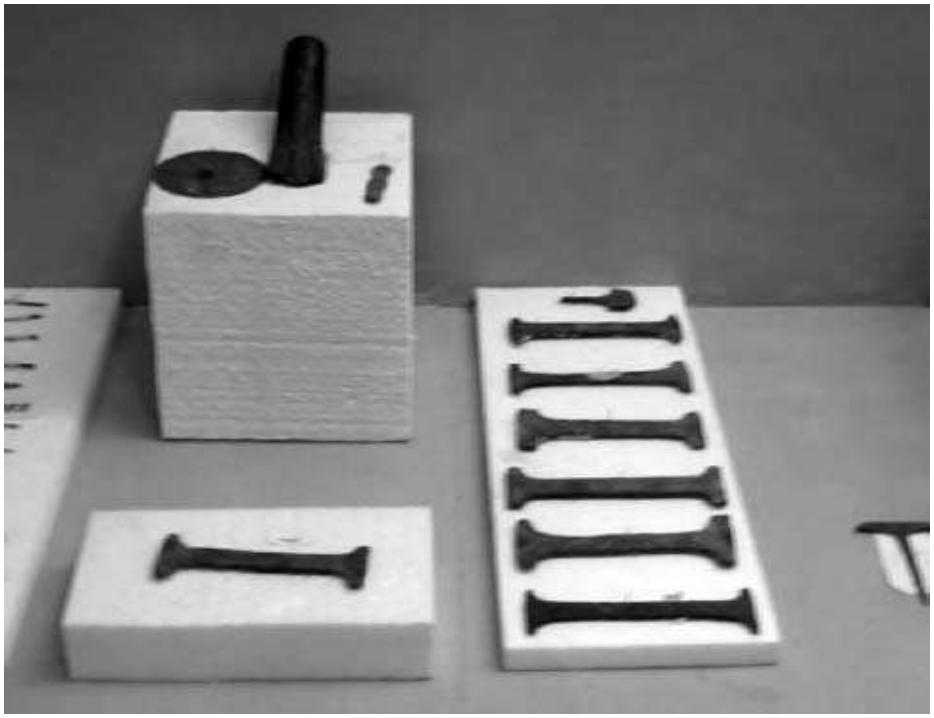
The sun was setting over La Paz and I was scheduled to join the group from the World Explorers Club for dinner that night. The next day we would be driving to the Peruvian frontier and crossing the border at Desaguadero, the twin border town on Lake Titicaca between the two countries. There would be military checks along the way and we would again be passing by Tiwanaku and the so-called Sumerian Pyramid, not yet discovered. Perhaps I would have to be

the one to give it a name.



Ramiro Gonzales ’ conceptual drawing of the canals at Tiwanaku

Two blocks with keystone cuts and a clamp in place, at the Tiwanaku Museum.



A series of bronze clamps discoverd at Tiwanku, plus a chisel, now at the Tiwanaku Museum.

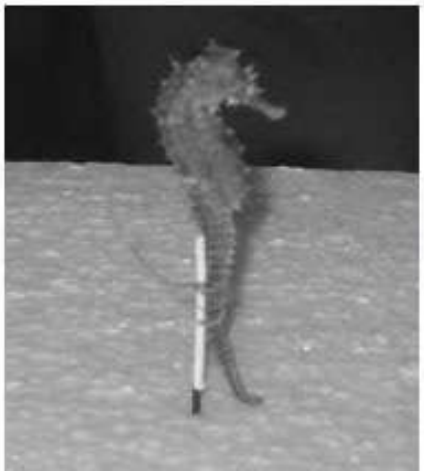
GEOGRAPHIC CHARACTERISTICS

MORPHOLOGY

GEOGRAPHIC LOCATION

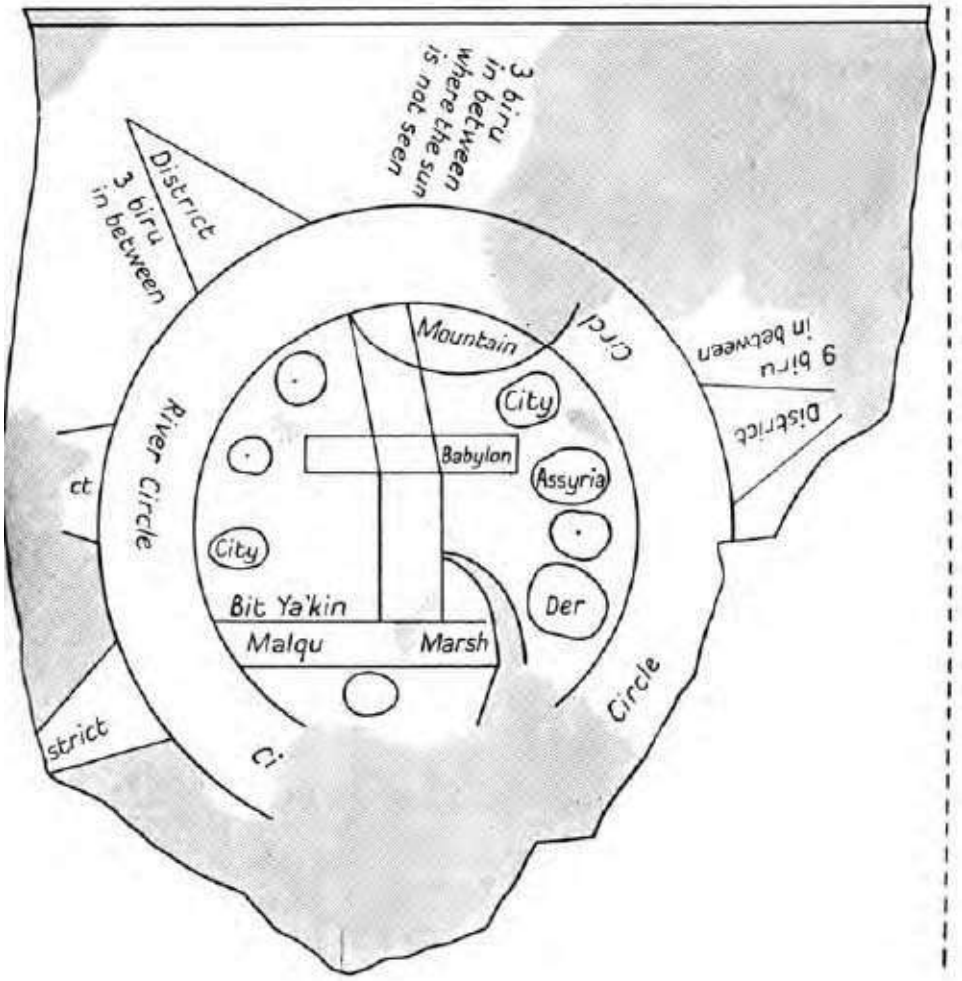
15° 13'	16° 35'	Latitude S.
68° 33'	70° 02'	Longitude W.
Altitude	3 810	Meters above sea level

LENGTH	179 Km
AVERAGE WIDTH	50 Km
PERIMETER	915 km
VOLUME OF WATER	900 x 10^9 m^3



Above: A map showing Lake Titicaca with its Greater and Smaller Lakes and nearby settlements. *Left*: A seahorse from Lake Titicaca on display at the Tiwanaku Museum.

A Sumerian oracular fish carved in bone and containing cuneiform characters.



A Sumerian map of the world etched on a tablet, circa 2700 BC.

Posnansky's map of Tiwanaku as a port city, with the docks at the very top

Poshansky's map of Tiwanaku as a port city, with the docks at the very top.

CHAPTER FIVE

THE MYSTERIES OF LAKE TITICACA & THE TOWERS

Books serve to show a man that those original thoughts of his aren't very new after all.
—Abraham Lincoln

The Strange Case of Lake Titicaca

Leaving La Paz and Tiwanaku behind, our group traveled by minibus to Guaqui, where we went through a military checkpoint where everyone had to get off the bus and show their passports. A long line of trucks waited along the side of the road to be inspected. At the border they would go through all this again, but on the Peruvian side. I surmised that it may take some large trucks a day or two to cross the border from Bolivia to Peru.

After being cleared to move on from the checkpoint by the Bolivian military, we arrived at the border town of Desaguadero. We filled out a form and then got stamped out of Bolivia. We walked across the short bridge that goes over the Desaguadero River, the only river outlet from Lake Titicaca, and a small, polluted river at that. We filled out another form and got our passports stamped into Peru. Visas to Peru are free for Americans and most other nationalities and the immigration officers welcomed us to the country with a smile. I was glad to be back in Peru myself, one of the most interesting countries in the world, and one that desires visitors and welcomes them with a genuine friendliness that is

not seen in every country in Latin America.

At this border town lined with shops, we got on another bus and began the drive along the western shore of the lake heading northward toward Pomata, Juli and Puno where we would stay for several days. Outside the bus I could see hundreds of terraces on the hillside. Most of them seemed unused, as if this area had once had a greater population than it has now. Where had everyone gone? Moved to the big city? Were these terraces abandoned many hundreds of years ago? It was hard to tell.

As we drove along in the late afternoon, I looked out the window of the bus and wondered about some of the mysteries of the lake.

Lake Titicaca is said to be the highest navigable lake in the world, at an altitude of 12,500 feet (3,810 m). It has a maximum depth of 932 feet (284 m), also making it one of the deepest lakes in the world. It is the 21st largest lake in the world and the second largest in South America, after Lake Maracaibo in Venezuela. Although the lake does have an outlet at the Desaguadero River, the whole area is said to be “endoreic” or a closed system. That means that the lake is basically fed by rainwater and the fairly constant water level is maintained by heavy evaporation. It is estimated that about 10% of the water disappearing from the lake flows out through the Desaguadero River and the other 90% dissipates through evaporation from the strong winds and intense sunlight (some sources say it is 95%). The level of the lake has changed widely over the millennia, with it apparently having been alternately much higher and lower in the past.

There are approximately 41 islands in the lake, including the famous Island of the Sun. Some legends state that the first Incas appeared on the island, while others have them appearing at a cave on the lake’s shore. Another legend says that a group of White men like the Incas lived on an island in the lake until the time of the Spanish conquest. Today the population around the lake is divided into the Aymara speakers along the southern and eastern sides of the lake and Quechua speakers on the northern and western sides.

The lake is composed of two nearly separate sub-basins that are connected by the narrow Strait of Tiquina. The larger, deeper lake is known as Lago Chucuito in the Aymara language, or in Spanish as Lago Grande (Greater Lake). The smaller and shallower sub-basin is known as Huinaymarca (or Winaymarka) in Aymara and as Lago Pequeño in Spanish (Little Lake). It is said that the name "Titicaca" is a combination of Aymara and Quechua names meaning "Rock Puma," and that the locals believed that the shape of the two lakes (seen from the air) together looked like a puma hunting a rabbit (which is the lesser lake, Huinaymarca). The Island of the Moon, an island near the larger Island of the Sun, is said to have been called "Titi'kaka" in Aymara. It may be that this name was originally meant for the Island of the Moon but is now used as a name for the entire lake. At any rate, the origin and meaning of the name "Titicaca" is largely a mystery though the 'puma chasing a rabbit' story is commonly told to

tourists. How the locals would have known what the two lakes looked like from above is unknown.

"Titicaca" has also apparently been translated as "Crag of Lead" which may refer to the ancient mining in the area, like that at Tiwanaku. As discussed in the previous chapter, the Fuente Magna Bowl now at the Precious Metals Museum in La Paz has two different types of Sumerian writing on it, and has been theorized that Aymara might have originated from ancient Sumerian. In Sumerian the term "In-Ka" or "En-Ka" means "great lord" and may have come down to us through the Aymara language as a word with the same meaning: Inca! Inca or Inka is now a Quechua word meaning "Great Lord" or king, but it may have originated with the Aymara and the Sumerians. So can we look to Sumerian to decode the word "Titi-kaka," since it apparently has no meaning in Aymara? Hugh Fox, as mentioned in the previous chapter, said that "Titi-Kaka" in Sumerian meant "tin cup (or vessel) that holds a special prominence" and was a name associated with the tin mining on the Altiplano.[55]

As I looked out at the lake as the bus drove north along the west side of the huge body of water, I thought about some of my other journeys around Lake Titicaca in years gone by. During those times I had often mused about sunken cities and other mysteries under those dark blue waters. There were also reports of lights over the lake and UFO activity. Did some ancient alien underwater/underground base exist beneath the lake? I discovered that there were many stories to this effect.

The Underwater Cities of Lake Titicaca

Today Lake Titicaca is divided between two countries, Peru and Bolivia, but in ancient times it was the Tiwanaku culture and its satellites that were centered on the lake. Tiwanaku, or some now sunken city in the southern part of the lake, was the capital. As we have seen, some evidence suggests that Tiwanaku and Puma Punku may have only been outlying suburbs of an even larger and more impressive capital city that is now under water. Legends of Titicaca tend to point to a past catastrophe and the destruction of an ancient city along the southern shore of Lake Titicaca—perhaps one that is different from Tiwanaku and Puma Punku.

We do not know the name of this city, although different names have been posited. Stories reach us from Inca times that there is a sunken city around the Island of the Sun, and that a tunnel once existed from the Island of the Sun to the Island of the Moon that lies some miles to the south. Underwater expeditions to the lake have been undertaken by a number of groups.

The BBC reported on August 23, 2000 that an ancient temple had been found by a team of divers. According to them the underwater city was called "Wanaku." Said the article (which mistakenly calls Titicaca the world's highest lake rather than highest *navigable* lake):

> The ruins of an ancient temple have been found by international archaeologists under Lake Titicaca, the world's highest lake.
>
> A terrace for crops, a long road and an 800-metre (2,600 feet) long wall was also found under the waters of the lake, sited in the Andes mountains between Bolivia and Peru. Dating back 1,000 to 1,500 years ago, the ruins are pre-Incan. They have been attributed to the indigenous Tiwanaku or Tiahuanaco people, said Lorenzo Epis, the Italian scientist leading the Atahuallpa 2000 scientific expedition.
>
> The holy temple measures 200m by 50m (660ft by 160ft) almost twice the size of an average football pitch.
>
> More than 200 dives were made into the lake, to depths of as much as 30m (100ft), to record the ruins on film. The explorers found the temple after following a submerged road, in an area of the lake not far from Copacabana town. The complete findings of the 30-member team, backed by the scientific group Akakor Geographical Exploring, are to be published in November. The team also hopes to eventually raise the archaeological remains to the surface.
>
> *Legends of lost city*
>
> The lake has long drawn fascination with various legends around it, including one of an underwater city called Wanaku and another of Inca gold lost by the Spanish. The Incas also regarded the lake as the birthplace of their civilisation, and in their myth, the Children of The Sun emerged out of the waters.
>
> Stories of the lost treasure were enough to draw the famous French oceanographer Jacques Cousteau to explore the lake. However, he discovered only ancient pottery. National Geographic also launched an expedition in 1988.
>
> The Tiahuanaco culture lived on the shores of the lake before becoming part of the Incan empire, based in Cusco, Peru.
>
> The Bolivian Government has said it will provide financial and technical support to preserve the ruins.

> “This means our civilisations have left more footprints than we had thought,” said Antonio Eguino, Bolivia’s vice-minister of culture.

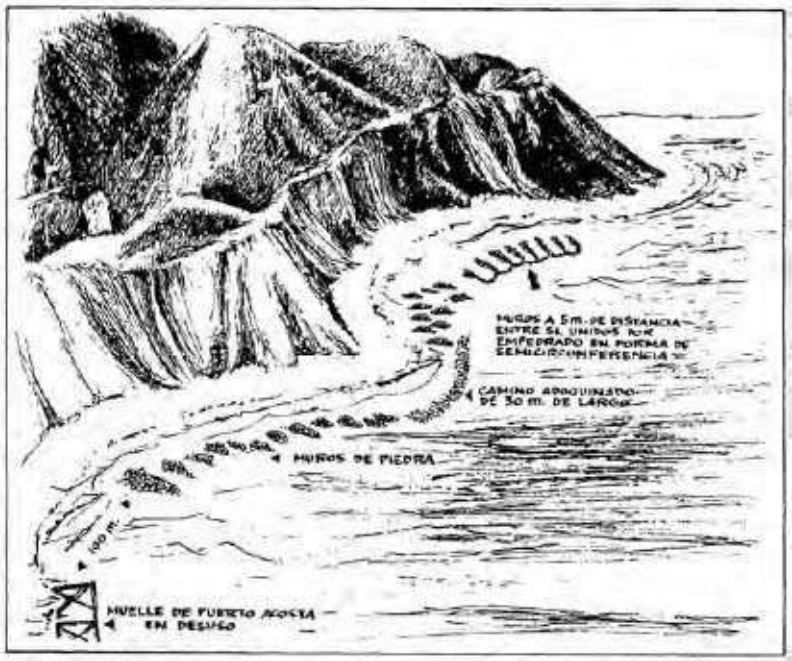
This expedition was undertaken by Akakor Geographical Exploring, the same group our Bolivian guide, Erich, had told us found a gold statue off the shore of the Island of the Sun. A check of the Internet resulted in some confusion. The Akakor web site described numerous expeditions undertaken by the group, but not the results. A link to a photo gallery shows pictures from various expeditions, but maddeningly, not pictures of the Titicaca finds. A very interesting page that is no longer available on the Akakor site was quoted on creatorsdream.com in an article titled “Atlantis, UFO bases or Ancient Civilizations Underwater in the Andes of Peru?” The original page had the title “Tiwanaku 2004 Expedition - Summary” and recorded the following report:

> The objective was to discover in the depths of the lake, through a series of extreme dives and the use of ROV (Remotely Operated Vehicle), old artefacts from the Tiwanakotas civilization, a precursor to the Inca civilization.
>
> We wanted to prove the “AKAKOR theory” which is briefly this: 6,000 years ago lake Titicaca was shallower and less extensive than nowadays. Land which is now covered by hundreds of meters of water was then dry and habitable.
>
> The AKAKOR team had already discovered some proof of this in the 2000 expedition. The expectations were therefore very high for this new expedition and the results have exceeded our highest expectations, catapulting the team of divers and scientists onto the world stage. At 120 meters depth we discovered roads and containing walls (probably used for agricultural purposes), all of which go back to 6,000 years ago, as the subsequent analyses show.
>
> The group discovered something incredible: for centuries the locals have told stories of the existence of a cave where there used to be human sacrifices carried out to the tune of 200 children in one day. Nobody knew where this was and some doubted the cave’s existence. This cave was found together with the remains of the little children.
>
> Underwater ruins from 6,000 years ago and a gold idol of some 35 kilos.[sic] The statue is an amazing artefact, but for the AKAKOR staff the real treasure was another: finally we have proof,

> after years of research, that our theory was right and the structures and artefacts which have been uncovered will determine new knowledge of the dawn of civilization in the Andes. This discovery elicits new explorations; the area of research was restricted to 20 square kilometers out of the possible 8,000, to avoid dispersion. A discovery which will rewrite the history of pre-Incas civilizations. The material gathered will be processed and analysed and the data will form the base for the new version of history.

This is all very interesting stuff, but the fact that the team did *not* storm the world stage with these incredible finds is disturbing. A video is posted on youtube.com of the 2004 expedition raising a statue, presumably the gold idol, from the depths of Lake Titicaca. Where is the statue now? The Akakor group mounted several expeditions after the ones described above, and vowed to follow up with detailed analyses of their finds. Where is this data? We at the World Explorers Club are trying to follow up and communicate directly with someone from Akakor. It is possible this data is on their web site, but only accessible by members.

The accounts of obelisks, walls and other structures in the lake are very intriguing, especially because it is difficult to dive in the lake because of the high altitude and cold water. Is there really a sunken city known as “Wanaku” in the lake? Personally, I think that there may be several sunken cities, one to the north of the Island of the Sun, one in the waters of the eastern shore near Puerto Acosta, and a third in the shallow waters of the Smaller Lake near the Taraco Peninsula and the various small islands located there, such as Taquiri, Paco, Suana and Pariri. The lake’s only outlet, the Desaguadero River is also located here. This area of the lake is much shallower than the Greater Lake with an average depth of only about 30 feet (9 m) and a maximum depth of 131 feet (40 m).



A map of the underwater ruins near Puerto Acosta, Bolivia.

It has been suggested that this shallow area of the Smaller Lake may have been a dry basin that was flooded with the water from the Greater Lake during the cataclysm that destroyed the area around the southern portion of the lake, including Tiwanaku and Puma Punku. Is the sunken city, “Wanaku” the sister-city of “Ti-Wanaku”? Would this fabulous lost city also be built of giant slabs of granite as seen at Tiwanaku and Puma Punku? This would seem likely.

It is interesting to note here, as an aside, that I was told in January 2011 by our Bolivian guide Erich that this area of the lake is famous for UFO sightings, including UFOs coming out of the water. He suggested that there was some sort of underwater “UFO base” in the area and that an ancient city was also located beneath this part of the lake—Huinaymarca—the rabbit. It is a fantastic thought!

As the sun began to set as we drove alongside the lake, I continued to ponder the mystery of Lake Titicaca and its megalithic ruins— both above and under the waters. Explorer and oceanographer Jacques Cousteau had come here in the late 1970s to search the bottom of the lake in a mini-submarine. He found giant frogs, but not much else, admittedly only covering a small part of the entire lake bottom in basically the deepest part of the lake. What was the famous French oceanographer looking for?

Underwater megalithic wall near Puerto Acosta on the east side of the lake.

Underwater megalithic wall near Puerto Acosta on the east side of the lake.

Local Indians have reported observing buildings and roofs in the lake, and that after long droughts when the water level was low, they could even touch the tops of the buildings with their raft poles! This was written off as superstitious talk until the early 1970s, when an American dive team discovered what was literally a sunken city on the eastern shore of Lake Titicaca! Near Bolivia's Porto Acosta, in about 65 feet (20 m) of water can be found the ruins of this ancient city. There are reports of other sunken cities in Lake Titicaca, and it may have been these rumors that piqued Jacques Cousteau's interest.

Our guide Erich told us that a Bolivian archaeologist has an explanation for the existence of a sunken city in the lake. He theorizes that the water was very low at one time after a severe drought, and people living on the lake foolishly built their city too close to the water. Later, when the drought ended and the water level rose, the city became submerged, a lost city to be discovered many years later by puzzled archaeologists.

This is not a bad theory, trying to explain in the simplest terms how a sunken city got in Lake Titicaca. As noted above, others suggest that that there was a massive tectonic shift and earthquake that rocked South America and tilted the Altiplano to the southeast, and flooded the Smaller Lake—Huinaymarca— plus the Taraco Peninsula and the area around Tiwanaku and Puma Punku. These two complexes were destroyed and buried under tons of mud and muck. Eventually the water drained away and exposed what was left of the ancient ruins. Thereafter, they was looted by cultures off and on for many hundreds of years.

Presently, there are two schools of geology competing for respectability in scientific circles, Uniformitarian Geology and Cataclysmic Geology. Uniformitarian Geology holds that the Earth's external and internal geological processes have been operating unchanged, and within the same range of rates, throughout the earth's history—and that these rates are typified by currently observed processes that are clearly gradual in nature.

Cataclysmic Geology theory states that these changes are not always uniform. According to this school of thought, sudden changes occur during which mountain ranges can be raised in a matter of days, and a continent or island can sink overnight. There is evidence to support both sides, but most scientists adopt the uniformitarian view, not necessarily because there is more evidence, but because it is too startling to think that sudden devastation may come upon the Earth.

Ancient books, legends and myths, on the other hand, tend to support the cataclysmic point of view. After all, water rising one inch per century is hardly the stuff legends are made of! Whether they be the accounts of a great flood in

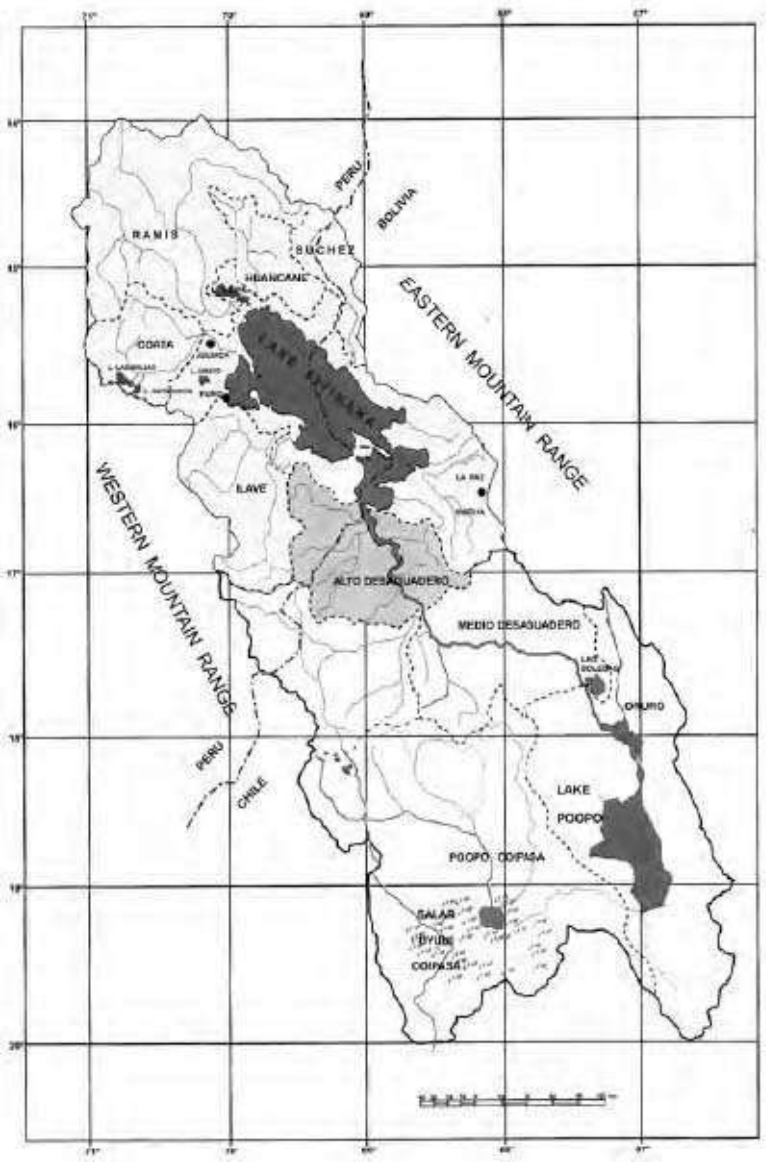
the Old Testament, the Sumerian Epic of Gilgamesh, or similar stories in Hopi books, Mayan texts and other ancient records, many tales from “long, long ago” tell of an upheaval of tremendous size which devastated civilization.

The Legend of Tunupa and Cataclysm on Lake Titicaca

There is a curious legend concerning the Aymara deity Tunupa and a giant wave of water on the lake. Tunupa is said to be one of the oldest “gods” of the central Andes and specifically the Lake Titicaca area. He is often considered the god of thunder and lightning as well as volcanoes. He is sometimes associated with the Quechua deity Viracocha, being essentially the Aymara version of this “god.”

According to the various myths collected by the early Spanish chroniclers about Tunupa, he died while on a raft sailing on Lake Titicaca. The raft was carried by the wind and hit the shores of Chacamarca with a shock that opened a large river south of Lake Titicaca. The online encyclopedia Wikipedia says that accounts of Tunupa were gathered by the early Spanish priest Fray Alonso Gavilán who said that Tunupa first appeared in Paraguay and traveled across the jungle to Chachapoyas in northern Peru. Eventually he reached the plateau of the Alitplano and Lake Titicaca. Here he launched a war with thunder and celestial fire against a god who was worshiped in the town of Cacha (Cachapucara?). He was tied to stake and then cast onto the lake on a raft. Tunupa managed to untie himself but the raft was pushed by a great storm to the Desaguadero River (Chacamarca) where the earth opened up and Tunupa with his raft sank into the bowels of the earth.

Wikipedia also says that the Indian chronicler Santa Cruz Pachacuti relates that Tunupa reached the plateau wearing very poor clothes and preaching, but was expelled from the village of Yamquesupa. Tunupa cursed the town, turning it into a lake. He then came to a village called Cachapucara where there was a “woman *huaca*” (witch) with whom he had a heated argument. In his anger Tunupa destroyed the people by breathing fire, and even melted the mountain that the village stood upon, such was his power. Tunupa was then captured and bound “hand and foot” but escaped and built a raft on Lake Titicaca. A cataclysm of some sort then happened; Tiwanaku was destroyed and Tunupa passed through the town of Chacamarca where the land opened up and the Aullagas (now Desaguadero) River suddenly opened up and he went down the new river to the sea (or alternatively “into the earth”). Is this fascinating legend about a massive earthquake that caused Lake Titicaca to spill out of its southern basin and flood Tiwanaku and other areas south? It makes sense!



A map of the Altiplano with Lake Titicaca and Lake Poopo.

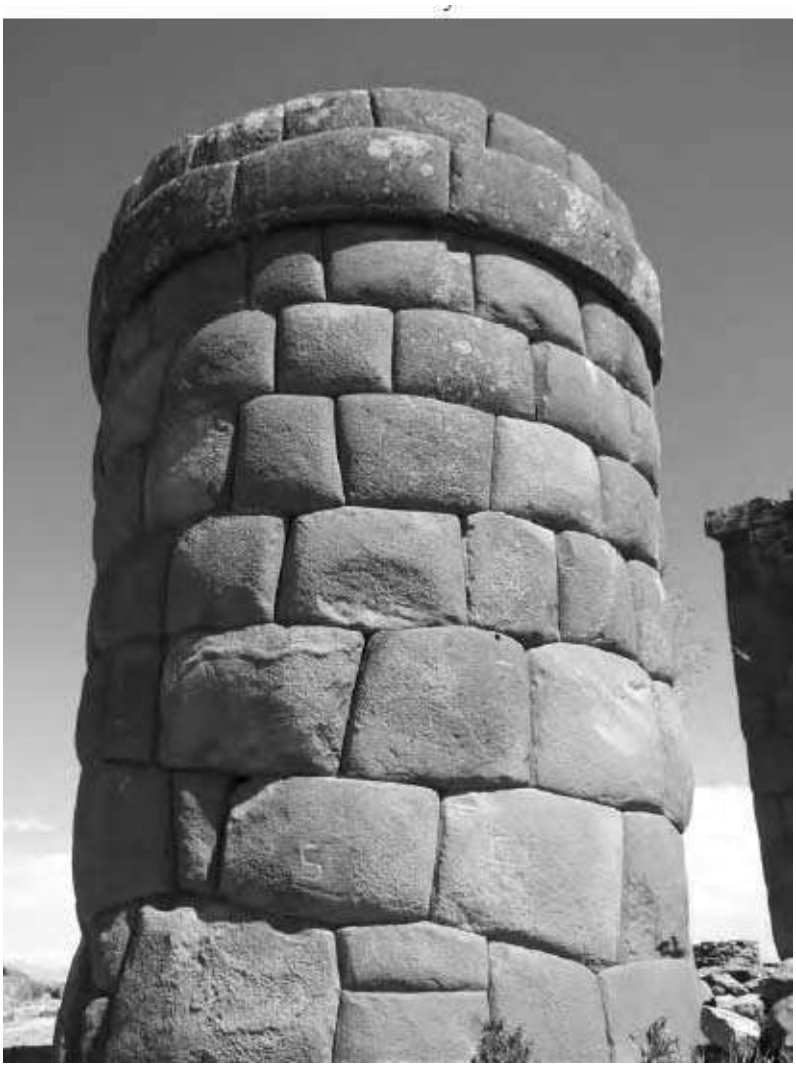
J.M. Allen is a British researcher now living in Bolivia who has written several books, including *Atlantis: The Andean Solution*, and appeared in several documentaries. He proposes that the city of Tiwanaku was built many thousands of years ago and was associated with a larger city near the Salar de Uyuni—the huge salt flats south of Lake Titicaca. Allen says that a gigantic tectonic shift in the Andes thousands of years ago tilted the Altiplano and Lake Titicaca in a southerly direction so that a great flood destroyed Tiwanaku and the city near the Salar de Uyuni. This city was surrounded by concentric canals, he claims, much like Plato described the lost city of Atlantis.

Allen shows a number of interesting Google Earth images on his website

“Atlantis in Bolivia.” He also shows some interesting photos of megalithic blocks half-buried in the ground at Pampa Aullagas near the Salar de Uyuni. He theorizes that the watery destruction of Tiwanaku and his canal city at Salar de Uyuni are the inspiration for Plato’s account of Atlantis, a story Plato said originated with Egyptian priests. He also says that the Aymara legend of the god Tunupa tells of the cataclysmic event that changed the shape of Lake Titicaca and poured a tidal wave of water through the Desaguadero River into Lake Poopo and the Salar de Uyuni. (www.atlantisbolivia.org)

Allen says that in the Bolivian legend Tunupa was the Andean god of the waterways, lakes and rivers (i.e., the sea god) and a teacher of mankind—in Greek legend the equivalent god was Poseidon. Allen says that Tunupa tried to dissuade the people from their degenerate ways but failed, so the chief of the gods decided to punish the city and sent against it thunder, lightning and storms and it sank beneath the rising waters of the sea (lake).

While Allen thinks that his lost city of “Atlantis” is further south in the Salar de Uyuni area of Bolivia, near Lake Poopo, is it possible that the main city is one still underwater in the Huinaymarca or Smaller Lake? Did Tunupa figuratively sail over this city as it was being flooded with water from the Greater Lake? While mainstream archeologists tend to discount such legends and doubt that there was any serious tectonic activity around Lake Titicaca in the last 10,000 years, there seems to be quite a bit of evidence for exactly such earth changes.



A serpent cut in relief on one of the towers at Culrmbo.

Cutimbo and the Mystery of the Towers

On one of our trips to the Altiplano, Jennifer and I arrived at Puno several days before we were to meet with our group. After spending some time in Puno, we decided to hire a taxi to take us to the mesa of Cutimbo about 45 minutes to the southwest. The towers at Cutimbo and Sillustani are megalithic, controversial and were not built by the Incas, even though guides will often tell tourists that they were. Basically, it not really known who built these mysterious towers—or when. They may be thousands of years old, like Tiwanaku and Puma Punku. Their purpose is not known although there are numerous theories. It seems that some of them were used as mortuary towers at some point, but that may not have been their original purpose.

Cutimbo is 25 kilometers from Puno on the main highway to the southwest

going to Ariquipa and the coast. This small mesa, much of it ringed by sheer walls of volcanic basalt, contains one of the great mysteries of Peru. Who built these structures and why? They appear to be built by the pre-Inca Tiwanaku culture, but they are also similar to some of the buildings in Cuzco. Were they built by the Incas? That is the confusion of the tourist guides and some archeologists. Most archeologists now agree that the towers (known as “chulpas”) found at Sillustani, Cutimbo, and other places are the work of a pre-Inca culture. But what was this culture? They don’t know.

[b] *A* puma cut in rend on one ol the towers at Cuttmbo.

The square tower with a snake cut into the corner at Cutimbo.

However, it would seem to be one and the same culture as Tiwanaku. I think the same people comprised the culture of Tiwanaku, Pucara, Cutimbo, Sillustani, Cuzco, Ollantaytambo and more. They made a world of giant granite blocks cut by power tools like saws and drills that sliced and cut the blocks in straight lines or jigsaw patterns, all because it was easy for them to do it with the advanced technology that they had.

According to the *Random House Dictionary* a chulpa is "a type of prehistoric stone tower, found in Brazil and Peru, having living quarters over a burial chamber." I have found that in Bolivia the word is usually spelled "chullpa." These towers are round or square and often megalithic in their construction. In many cases, like at Cutimbo, they are in quite remote locations. Why was such a construction effort made in these backwaters? Where are the nicely made houses of these builders? Although Random House says the towers contained living quarters, this is not widely accepted. Did the builders live in mud huts while they made megalithic structures out of granite and basalt? It is baffling!

Two of the towers at Cutimbo, the first with a doorway big enough for a person to enter. Inside, one can see niches in the walls and corbelling toward the top of the structure.

Our taxi driver guided us over a rocky hill and we came to a wide valley full of rocky mesas, many with sheer cliffs at the very top. A small village was

coming up with some mud brick houses on either side of the road. This was the small village of Cutimbo. The taxi slowed as we came to the houses and we could see some large stone towers on the top of the mesa. They were near the cliff edge of the northeastern side of the mesa and could therefore be seen from the road. We kept going past the village, however, and then turned left up a dirt road that took us partway up the hill and then diagonally across the side of the hill to a parking area and empty ticket booth.

From here we had to hike up a zigzag trail to the top of the small mesa. The cliffs are sheer in many areas near the top, but the trail made it to the apex by going through a cleft in the rock. At the

summit, three huge towers and a stone ramp can be seen. There are other towers at the site and we visited their remains by walking around the mesa. There were seven or eight towers in all, including one tower that is below the mesa.

One of the towers had a massive stone ramp of small stones going up to it from the southern side. Had it been used in the initial construction of the towers as a means of getting the large blocks up to the higher levels? It seems rather that this ramp was made by the Spanish in some attempt to dismantle the towers, but this is another enigma of Cutimbo. It also demonstrates the tremendous effort required to build these towers by conventional means—just building a ramp up to the towers for construction or deconstruction is a major engineering project.

The towers at Cutimbo are generally thought of as funeral towers as are most chulpas. But this seems curious as their location is seemingly very remote, and given the precision that has been used in their building. All that is clear is that for some reason Cutimbo and Sillustani were very important to some ancient culture.

A strange bit of the cliff at Cutimbo that has been cut and highly polished for no known reason.

Why were they building these splendid towers of perfectly formed and cut granite or basalt blocks? The process, according to the mainstream archeologists, would have been extremely long with the primitive techniques which they so patiently applied. Or did it all happen with the quicker, steady work of a power tool? When we see the construction at Cutimbo and Sillustani we have to think that this is the case.

One of the other megalithic towers at Cutimbo, this one with a serpent on it.

Another megalithic tower at Cutimbo.

One of the towers at Cutimbo, this one with a ramp leading up to it.

The Towers of Sillustani

When we arrived in Puno with Chris Dunn and our group of World Explorers, we settled inot our hotel and had a dinner of trout at one of the local restaurants. The next day we took our minibus to Lake Umayo on the other side of Puno to see the towers at the site of Sillustani. This lake is separate from Lake Titicaca and has a curious island-mesa in its center. At one time it might have been connected to Lake Titicaca. Due to a recent construction project, the town is nicely paved and ready for tourists, who arrive by bus or car, and then walk up to the top of the nearby mesa to see the curious megalithic structures. These consist chiefly of a series of towers and battlements. A group of stone circles stand nearby which are called “Sun Circles.” They may be the bases of dismantled stone towers, but appear to be separate standing stones. Most interesting are the strange round towers, constructed with great skill out of large blocks of andesite stone. Like their twins at Cutimbo and elsewhere, their origin and purpose remain a mystery. They are constructed using the same pre-Incan techniques found at Tiwanaku, Cuzco and Machu Picchu.

Old print of Sillustani, 1877.

The Sillustani towers are wide at the top and taper to a narrower diameter at the bottom, like a funnel. They have only two small openings, one at the bottom and one toward the top. These openings are too small to have been used as doors, as only a child could squeeze in through them. At both Cutimbo and Sillustani, pumas and snakes can be seen carved into the perfectly fitted, pillowed blocks of granite: the same symbols can also be seen on certain walls in Cuzco. These amazing megalithic towers on the flat top of a volcanic hill are baffling and huge. Nearly indestructible, these towers—some round and some square—can have an open top or a “closed” one (though it seems there was always some degree of opening at the top). The open tops could have served to make a whistling noise when the wind blew, similar to the sound which is made when one blows across the top of a soda bottle.

One of the megalithic towers at Sillustani.

One of the megalithic towers at Sillustani seen from below the mesa.

In the 1905 edition of *American Anthropologist,* Adolph F. Bandelier (1840-1914) discusses many of the theories behind the towers and Sun Circles. He suggests that the towers were probably used as grain storage silos, the small doors being ideally suited for protecting the crop. He also states that it was the opinion of most of his contemporaries that the towers were burial chambers. Yet, it would have been difficult to put an adult body inside with any dignity, and one can hardly imagine the doors were for visitors! In reality, few remains of any type have been found inside any of the towers. Also interesting is that construction of a few towers seems to have been abandoned while in progress.

Bandelier also mentions that the Sun Circles would appear to be intended for some astronomical purpose, even though they are not on level ground. Archaeologist William Corliss comments, in his book *Strange Artifacts* (1974), “A fascinating possibility in connection with the sun circles on inclined ground

is that they were built on level land originally, but were tilted by a later cataclysm (which perhaps also interrupted tower construction). The region around Lake Titicaca was apparently tilted in recent times."[17]

Victor von Hagen visited the towers in the early 1950s and reported on them in his book *Highway of the Sun.* Calling them the Towers of the Dead, he writes, "...fourteen feet high, some circular, others square, the Towers of the Dead were wonderfully fashioned of stone in the megalithic style with huge polygonal rocks fitted together so exactly that even moss could not find lodgment. The corbeled vaults inside, almost as high as the towers, were of meticulous stonework. There were a few bone fragments lying about, and some bits of pottery—not much more, for these tombs had been sacked first by the Incas and later by the Spaniards, and so thoroughly that just who built the houses of the Dead has never been discovered."[36]

One of the "Sun Circles" at Sillustani with a tower in the background.

Von Hagen also quotes a curious passage from the historian Cieza de Leon, who indicated that the towers were tombs: "...the tombs were built in the form of small towers... according to the rank and wealth of those who built them. They carry the corpse to the place where the tomb is prepared... there they burn ten or more llamas... kill the women, boys and servants who are to accompany him on his last voyage. All these are buried in the same tomb with the body. The mourners then walk along uttering sad and mournful songs.. .while an Indian

goes before them beating a drum. The great tombs are so numerous that they occupy more space than is given to the living."[36]

The base of one of the megalithic towers at Sillustani.

This funerary ceremony sounds incredibly similar to that used by the ancient Egyptians! Certainly Cieza did not witness either the building of the towers or the burial ceremony, though what he reported was the tradition. One wonders if Cieza had been reading too much about ancient Egypt and China when (if?) he visited the stone towers, or if he had been fed a load of hooey by the locals he interviewed. It is also possible that Cieza de Leon was discussing mud brick towers used by the Aymara as tombs, and not the giant stone towers. Were the stone towers originally built for some other purpose, but then later used as tombs by the Incas and earlier cultures like the Aymara? This could certainly be the case, although to my knowledge there have been no finds of llamas, women and children in a mass burial.

As has been noted, archeologists can easily give a wrong date to a place because of the antiquity and reuse of the site. If these round or square structures were used as burial tombs by later cultures there will be all sorts of datable material—but not necessarily from the time that the structures were built! As an example, a tower at Cutimbo could have been built in 300 BC but a bone found inside it could be dated to 600 AD. Stones fitted into place without mortar cannot be dated with our current dating technology. We need to find datable

artifacts like bones or ceramics or wood. This is the trap that modern archeology falls into with megalithic buildings—being able to date a bone but not knowing if the building is actually thousands of years older than the bone that was found!

Ultimately, this is the problem with all megalithic construction and is very much applicable to Sillustani, Tiwanaku, Puma Punku, Cutimbo, Cuzco and Ollantaytambo: these buildings are originally made to last for a very long time and to be virtually indestructible and so can be continually occupied for hundreds and even thousands of years. The occupiers need not necessarily be the builders as time marches on.

What Was the Purpose of the Towers?

In deciphering the mysteries of the builders of the megalithic monuments in Peru and Bolivia, the towers at Cutimbo and Sillustani can be of great help. While little seems to be known about thle towers of Cutimbo, they are generally thought to be contemporary with the chulpas of Sillustani which are said to be pre-Inca by most archeologists. One wonders if they would be as old as nearby Pucara, known for its Tiwanaku style pottery and statues. Pucara is generally dated to 300 BC to 300 AD, and rather than being “related” to Tiwanaku, it is probably part of the same culture, as are most of the megaliths around Lake Titicaca, including the chulpas of Sillustani and Cutimbo. Other chulpas are located in Bolivia around the Salar de Uyuni, near the town of Ururo. Still more can be found in Peru just off the road that follows Lake Titicaca to the Bolivian border.

A destroyed square-shaped megalithic tower at Sillustani.

Since the dating of megaliths in Peru and Bolivia is highly questionable and they often seem to be much older than mainstream archeologists would have us believe, we might think that the chulpas and even Pucara date back to 3000 BC or possibly earlier. I am using the Fuente Magna Bowl in La Paz as the basis for this date. As more and more archeologists realize that the chulpas are from the Tiwanaku culture, a date of at least 500 AD could be assigned to them and probably a date much earlier.

It is questionable that the chulpas of Cutimbo and Sillustani were originally built as funeral towers. They may have been used as such by later cultures, including the Incas, but their original use might have been something quite different. It is known that the Aymara did inter their elite, whole families all in a fetal position, in funeral towers, often made of mud brick. They may have used these megalithic towers as well, but did they build them? Some were unfinished, which would seem to indicate that the Aymara were unable to complete them. Did some sophisticated culture come here, build awesome megalithic monuments—including these towers—and then leave, with some projects uncompleted? And did the succeeding cultures continue to use these towers as funerary monuments although they could not complete the construction of structures left unfinished?

As funeral towers—and fine towers they are—they are well located for the wind and dryness necessary for mummification, and would have had good “feng

shui" (the special cosmic balance of wind, mountain and water that the ancient Chinese believed was important for the situation of certain temples and mortuary monuments). One could easily argue that Cutimbo and Sillustani have good feng shui for the burial of the ancient kings of Tiwanaku. If the theory that the towers were burial chambers is correct—and it is favored by most archeologists—then the mystery towers of Cutimbo and Sillustani may be closely related to ancient Chinese cultures and their beliefs about feng shui. Did the Sumerians also have similar beliefs concerning the wind and mountain views of funerary monuments? We do not know much about this aspect of the strange Sumerian culture.

If we want a different explanation from funerary towers, then what do we have? As our group stood at the top of the mesa near one of the towers, I asked Christopher Dunn what he thought their purpose might be? We then discussed different theories on the towers. We were both familiar with the tomb theory, but I mentioned the interesting fact that some of the towers have stone lips and open tops that would make a whistling sound when the wind blew across them.

Serpent carved in relief at a Yezidi temple in northern Iraq.

Serpent carved in relief at a Yezidi temple.

On a calm day, the towers would remain quiet and make no sound. But when the wind started to pick up and blow across the tops, these towers would make an audible sound that could be heard for quite a distance. In most cases these towers are placed on top of high, windy mesas and could make a lot of noise if that was the purpose. Might they have been weather gauges for when the wind was particularly strong, or in an even more high tech scenario, be “tuned” to a certain pitch? It is sometimes said that all the small doors in the towers are facing to the east (I am not sure this is really true) but perhaps the reason for this would be that the wind is generally blowing from the west to the east and it would make sense to make a “whistle hole” on the east side away from the wind.

Two stones near the central plaza in Cuzco with serpents cut in relief, as at

Two stones near the central plaza in Cuzco with serpents cut in relief, as at Cutinibo.

I also mentioned to Chris my own theory that the towers were originally smelters for the melting of rich ores that were used in the keystone clamps in the megalithic construction at Tiwanaku and PumaPunku, Cuzco, Ollan-taytambo and elsewhere. It is obvious to me that Tiwanaku, Puma Punku, Pucara and other sites were all part of a sophisticated mining and metallurgical operation that refined huge quantities of rich ore bearing gold, silver, copper, tin, lead and other metals. Archeologists admit that molten bronze had to have been poured into the keystone cuts in the granite blocks of Tiwanaku and Puma Punku. But where did these refined metals come from? Were the towers at Cutimbo, Sillustani and elsewhere part of the | metallurgical process, used as forges for melting the rock and extracting the valuable metals? Something like that had to be going on, and if it was not at Tiwanaku, Cutimbo, Pucara and Sillustani, then where was it?

One of the megalithic towers at Sillustani, partially destroyed.

A drawing of one of the statues found at Pucar.

Another related explanation was that a massive amount of charcoal was needed in the smelting process of the tin, copper and other metals. Were the towers giant ovens for making charcoal? Did this have some affect on the deforestation of this area of Peru in ancient times? It is an area still largely devoid of trees, but they can grow here—and do—and there may have been huge forests around Lake Titicaca in the past, which are now gone. Yet, not far away are huge forests, often at even higher altitudes than Lake Titicaca. To the east of the lake are huge high-altitude forests which give way to dense jungle, including bamboo, as the altitude drops on the way to the Amazon Basin.

Chris expressed the idea that a possible function of the towers could have been to relieve stress in the earth, in a similar way that he theorizes the pyramids of Egypt also helped relieve stress in the earth. This would have meant that there were fissures in the rock beneath the mesa on a fault line of earthquake activity, I gathered.

It is interesting to note that the early Quechua-Spanish nobleman Felipe

Guarnan Poma de Ayala published his illustrated chronicle of the Incas in 1615 that included a drawing of the Sacsayhuaman fortress above Cuzco featuring a large tower. This tower looks very similar to the towers at Sillustani and Cutimbo. In 1615 this tower (there were said to have been three) was still in place. It was dismantled in the decades that followed.

But we now have more questions: Were the towers at Sacsayhuaman burial towers? Probably not! If the towers at Cutimbo and Sillustani are pre-Inca, then are the towers at Sacsayhuaman pre-Inca as well (and all of Sacsayhuaman)? Yes, it would seem that way. Indeed, the towers at Cutimbo, Sillustani and Sacsayhuaman are all good proof that many of the megalithic structures attributed to the Incas are actually pre-Inca and more closely associated with the Tiwanaku culture and its construction techniques. What was their purpose? Were they energy acupuncture needles of stone for the earth, like obelisks and the famous round towers of Ireland? Smelting or charcoal-making towers? Or did they whistle and make noises on the windy days on top of mesas and hills, perhaps serving as a foul weather warning system? Perhaps they were for grain storage or just tombs for the dead, fancier than the houses people lived in during their lifetimes. These towers, shall we say, remain a mystery.

The Tunnels of Tiwanaku and the Route to Cuzco

We had dinner back at the hotel and looked out over the lake. Lights twinkled in the distance along the curving shoreline of Puno Bay. There were a number of stories of mysterious lights around the lake and of some sort of UFO activity. In fact, Lake Umayo where Sillustani is situated is also independently known for UFO activity. Is there some sort of underwater UFO base in Lake Titicaca or Lake Umayo used by the Annunaki or someone else? It is a fantastic thought, but it is a subject commonly discussed around Puno and apparently a fairly large group of people—Peruvians and visitors alike—have come to believe this.

We went over our plan to meet up in Cuzco in a few days, and the next morning Chris and part of the WEX group took a tourist intercity bus to Cuzco, about seven hours away. Jennifer and I would spend a few more days around Puno and visit the floating islands of the Uros people.

The Uros live on about 42 floating islands, mainly near Puno. The islands are essentially huge floating mats of woven totora reeds, which grow in the shallow parts of the lake. New woven reed mats have to be added every three months or so to bolster the foundations of the floating islands. Each island is home to about 10 families, who live in houses also made of woven reeds, with totora thatch

roofs. They eat the reeds, burn them for heat and cooking, and use them in medicinal remedies. The Uros have unusually good teeth for people in this region, and they attribute this to chewing totora reeds. The reeds are also used to make extremely buoyant boats. Totora reeds also grow on Easter Island, and boats found there are remarkably similar to the boats on Lake Titicaca.

The Uros are an unusual people who are pre-Inca and widely acknowledged to be one of the oldest ethnic groups around Lake Titicaca. Genetic testing has shown them to be of different heritage from the Aymara and Quechua people now living in the region, and the web site incatourism.com says, "It is thought that their origins lie directly in Polinesia [sic], contrary to the majority of the indigenous people that have populated the continent, coming from the north." Interesting!

According to their creation legends, the Uros are older even than the sun, having existing for years in a cold, dark world. They say that they have dark red or "black" blood stemming from that beginning, which helps them endure the cold of the high altitudes today. They call themselves the Sons of the Sun, the "lupihaques," which would seem to link them to the City of the Sun, Tiwanaku. Not surprisingly, most mainstream archeologists fail to see any connection between the reed-island lake people and the megalith builders of Tiwanaku and Puma Punku. It is difficult to find suggested dates for when the Uros moved into the region, but they lived around Titicaca for a long time and could well have had interaction with (or been a part of) the Tiwanaku culture in the course of history.

The Uros have largely intermarried with the Aymara, and now speak that language and Spanish. Their own language, Uros, is dying if not gone; some say the last native speaker died in 1970, while a *New York Times* article from June 18, 2001 says the language is "just about dead." Interestingly, that article, entitled "Lake Titicaca Journal: On a Lily Pad, Life is Lush but Watch Your Step," notes that an early Spanish chronicler described the Uros language as "the most vulgar in the king's realm." Given what we have learned about Aymara possibly being derived, at least in part, from Sumerian, I think there is some urgency to preserve and study the Uros language and see what may be its roots.

Jennifer and I took a tourist boat from the wharf in Puno out to the main tourist island. The motorboat, laden with 20 passengers, sped away from the wharf and soon entered a channel lined with the totora reeds that cover the shore and all the shallows of the northern side of the lake. The water in this area was only a meter deep or so, and an artificial canal had to be cut into the bed of the lake to allow the motorboats to get to the floating islands.

We stepped out onto one of the islands with our small group, most of them Peruvian tourists from Lima or Arequipa. There were two German women in our group as well, and we all got a nice introductory lesson on the Uros from a colorfully-clad native woman. We were told that the Uros had resisted conquest for thousands of years on their floating islands—some with watchtowers—but had finally succumbed to the Inca Empire about 500 years ago. At this time, they became subjects of the Quechua-speaking Inca Empire and in some cases became slaves, their power over Lake Titicaca having finally been subdued.

After our visit with the Uros, we spent another night at the hotel in Puno and went the next day through Juliaca, the busy industrial town that has Puno's airport and train station, on to the town of Lampa, which we had heard was the site of some strange tunnels. We wanted to investigate these strange underground workings—mines, tunnels, passageways, or whatever—and see what this curious and now out-of-the-way town had to offer.

Peruvian historian Montesinos wrote in his *Memorias Antiguas, Historales, Políticas del Peru:* "Cuzco and the city of ruins Tiwanaku are connected by a gigantic subterranean road. The Incas do not know who built it. They also know nothing about the inhabitants of Tiwanaku. In their opinion it was built by a very ancient people who later on retreated into the jungle of Amazonia." This mysterious tunnel connecting Tiwanaku and Cuzco is said to go through the town of Lampa, once a major town on the old highway to Cuzco. The modern highway to Cuzco bypasses the town, so most travelers miss this pleasant, sleepy town on their journey between Puno and Cuzco.

Today, the town of Lampa is about 10 miles down a side road to the west of the main highway. Lampa is dominated by the 400 year-old Church of the Immaculate Conception. To our disappointment, the doors were locked, but a note said that the caretaker was at lunch and listed a phone number. We decided to have some lunch ourselves, and wandered into a courtyard restaurant on the main square where the staff looked a little discomfited to be confronted by foreigners. There was no menu per se, but we were given a choice of chicken or fish, and served nice plates of trout accompanied by the standard Peruvian sides of potatoes, rice and vegetables. When we returned to the cathedral, it was still locked, and we had to find a phone and call the custodian to let us in.

When we met the friendly young man at the cathedral doors, he explained that he would need to accompany us on our tour, which turned out to be a bonus in that he provided a lot of interesting information. The sanctuary was decorated with several large paintings from the "Cusqueno School," a style of art developed in colonial times when the Spanish taught the local populations about

Christianity and oil painting, and encouraged them to express Christian themes. The results were particularly graphic and bloody depictions of the passion of the Christ. A side chapel held a statue of the crucified Christ made from leather, which our guide told us is one of only two in the world.

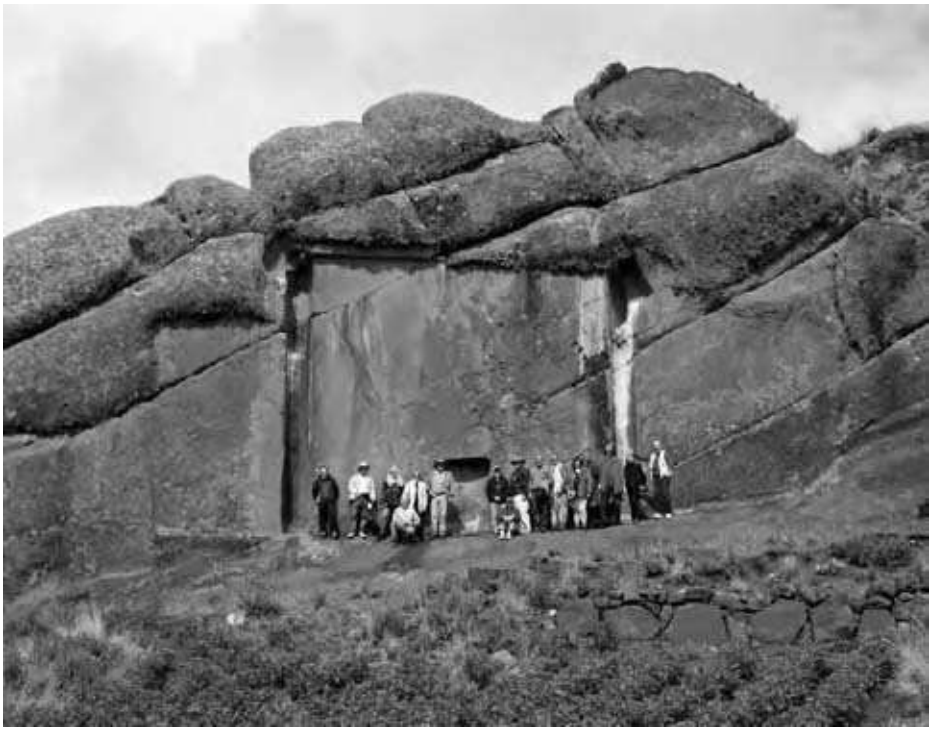
We then went to the ossuary, an addition to the cathedral built in the 1970s of Italian marble, funded by a local benefactor named Enrique Torres Belon. He had the addition built over an old cemetery, and decorated it with a thousand skulls and 37 complete skeletons exhumed from the graves. He got permission from the Pope to have an exact replica of Michelangelo's Pieta made to crown his mausoleum (he was interred in this spot after his death). When the plaster model of the famous Pieta turned out to be too heavy to place atop the mausoleum, Belon got permission to have an aluminum replica made, which now stands atop the structure. When the actual Pieta at St. Peter's Basilica in Rome was damaged by a deranged man in 1972, the Italians used the copies at Lampa to aid in its restoration.

After viewing the ossuary, we were taken down into the crypt and tunnel system beneath the church. We saw the pulley and rope system used in the celebration of the Immaculate Virgin on December 8th of every year, when the sanctuary of the church is infused with incense smoke and the statue of the Virgin, normally seen standing above the altar, is lifted and made to "fly" down from her pedestal to be paraded around town in a golden carriage.

There were several niches in the walls of the subterranean passage where human skulls were surrounded by coca leaves, cigarettes and other offerings. Very surreal. The custodian showed us two side tunnels beneath the church that had now been blocked off. He said that legends of the area said the tunnel going north went to Cuzco. The other tunnel (going south) was said to go to Puno and then Arequipa. He made no mention of it going to Tiwanaku, though this would seem to be the legendary tunnel that supposedly linked Tiwanaku and Cuzco. He told us that some years ago people had tried to follow the tunnels to see where they went, and these explorers were never seen again. Shortly after that the church had the tunnels sealed up and today it would seem virtually impossible to enter these tunnels—at least at Lampa.

The Lampa area is a mining district and perhaps the tunnels were part of some ancient mining endeavor, one that was done in pre-Inca times, possibly by the Tiwanaku culture. The area was also important in the Inca Rebellion—maybe they were built for military purposes. The legends of tunnels in Peru and Bolivia are numerous and often baffling to modern visitors and archeologists. Why would ancient people build an extensive tunnel system through the Andes?

Well, tunnels are a natural part of mining, following a certain vein of metal, and were also used historically as escape routes in the case of an invasion. Modern tunnel systems exist in many parts of the world, especially in mountainous areas. Tunnels can be built to make transportation easier by cutting a tunnel directly through a difficult mountain ridge in order to avoid having to make a road up a steep incline, or along the sheer face of a cliff. Was the legendary tunnel system between Tiwanaku and Cuzco some sort of direct route between these important centers that made the journey easier by alleviating the need to trek over mountain passes? Such a tunnel system would require a great deal of work to say the least and would probably require some pretty high tech tools and devices, including some sort of lighting. The whole thing seems fantastic, yet below the church in Lampa, the remains of the supposed tunnel can still be seen to this day! Tunnel systems are also associated with Sacsayhuaman and Cuzco as we shall see.



World Explorers dub group at the Amaru Muru Door on the shore of Lake Titcaca.

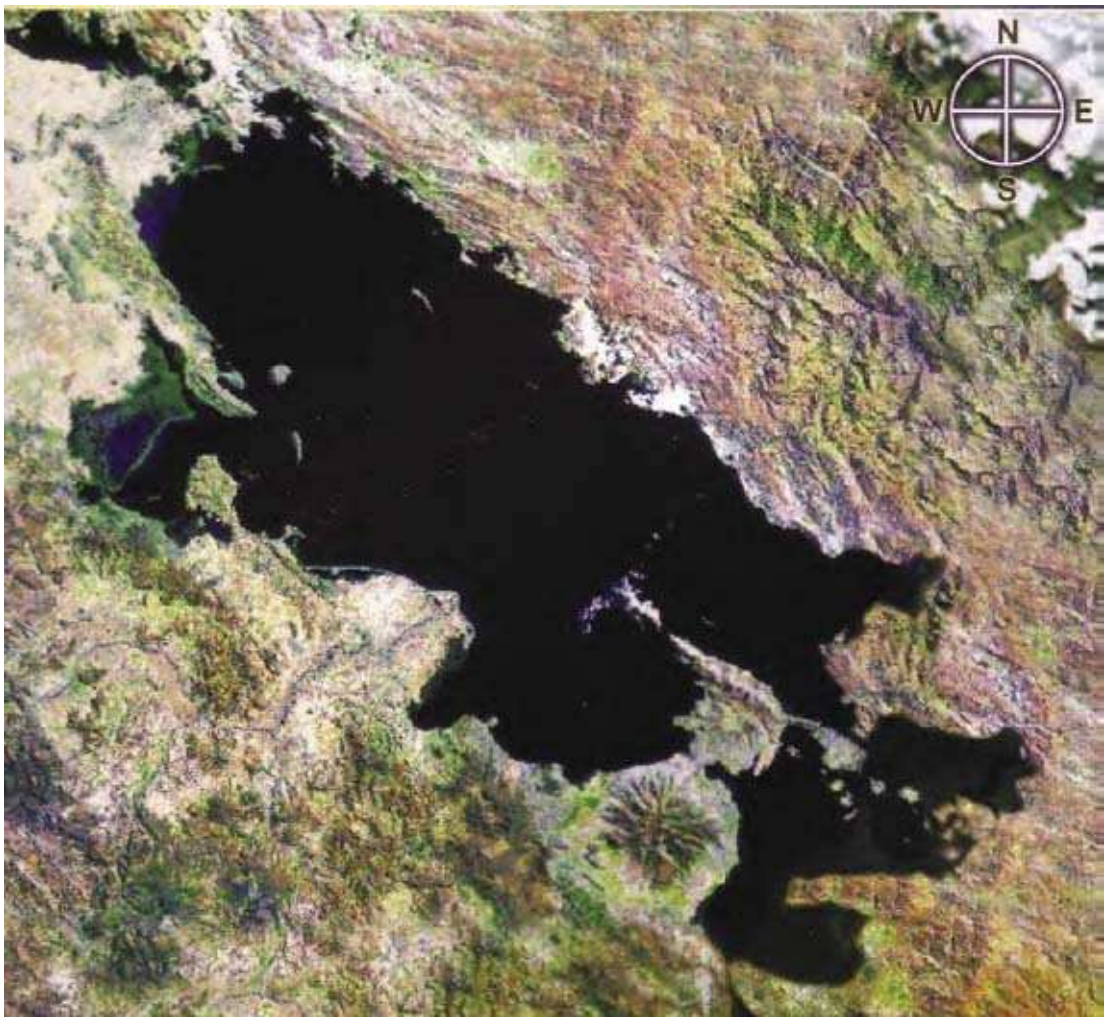
We returned to Juliaca in a shared taxi from the main square in Lampa. Lampa was a sleepy place, albeit a fairly large town in the area—a mining town—but life was now passing it by. The next day we would take a bus to Cuzco, the top tourist destination in South America and one of the greatest cities in the

world. Cuzco is a megalithic city, one built hundreds, if not thousands of years ago. It is a prime example of megalithic structures being used by subsequent civilization—right up to the present day! Some say that it is the center of the world.

The 1615 woodcut showing a tower at Sacsayhuaman, Cuzco.

Top: One of the destroyed square megalithic towers at Sillustani. *Bottom:* Christopher Dunn stands near the corner of the square tower with its huge blocks.

One of the megalithic towers at Sillustani, this one with a carved lizard on it.



A satellite photo of Lake Titicaca showing the Greater Lake and the Lesser Lake.

The famous Gate of the Sun at Tiwanaku with its central figure and birdmen "running" to him.

Top: A photo of the megalithic city of My Son in central Vietnam. *Left and Above:* The stone blocks with their unusual and complicated articulation and keystone cuts are very similar to those found at Tiwanaku and Puma Punku.

A map showing the lower portion of Lake Titicaca and the area where the underwater city may be located.

The great southern entrance to the Kalasasaya Temple at Tiwanaku.

The supernatural figure on the Gate of the Sun.

Right: The famous Kon Tiki statue at Tiwanaku with its mustache and beard. It holds its arms across its chest with its hands on its heart and stomach in the classic Pacific Island tiki pose.

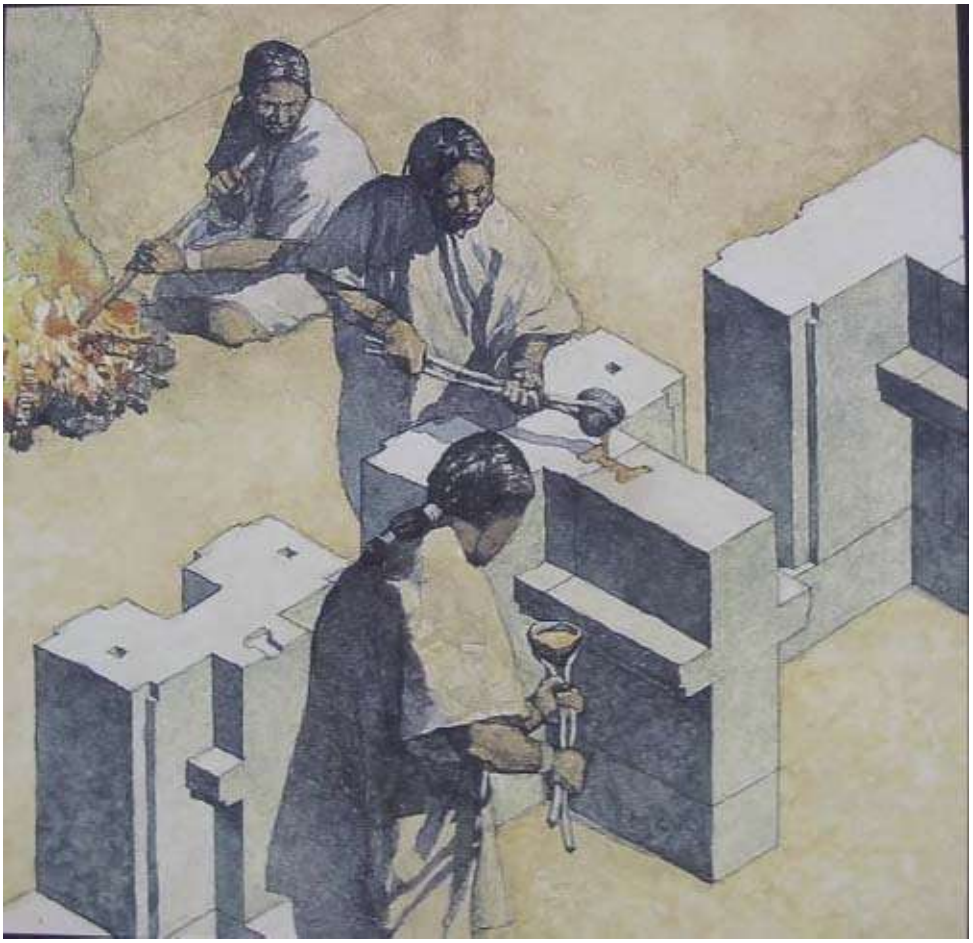
Photo of the monolithic doors at Xerxes' Palace in Persepohs.

Chris Dunn examines a block at Puma Punku with small drill holes in a very straight groove.

Gigantic blocks of granite, some with keystone cuts, at Puma Punku.

Right: A photo of one of the moats or canals at Tiwanaku with \¿ a channel opening on the bottom. Was it used to wash ores?

The statue called The Friar at Tiwanaku holds a curved knife known as a kris in Indonesia.



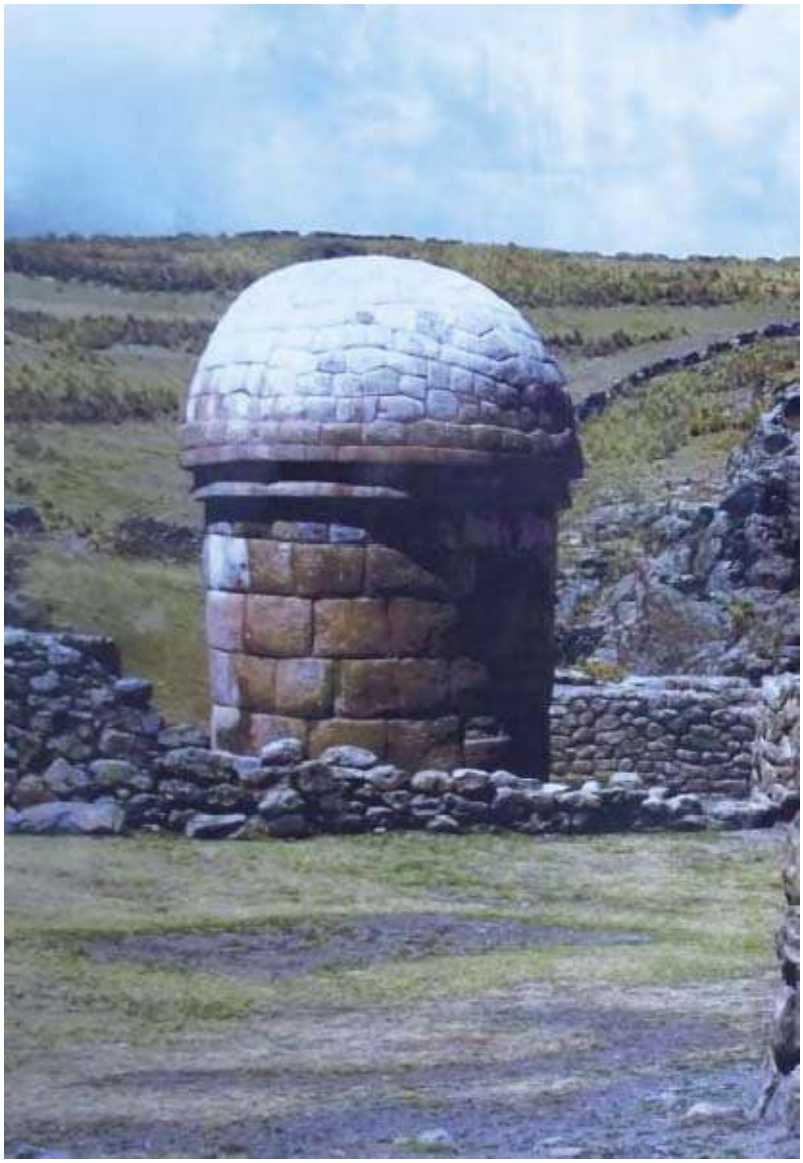
Above: An illustration at the Tiwanaku Museum of men dressed in tunics pouring molten metal into the keystone cuts in some of the H-Blocks at Puma Punku. Why the complicated articulation of the blocks? *Left:* A painting of Egyptian masons dressing large limestone blocks to be used in temple walls. *Below:* A drawing of Sumerians moving a large statue at Nineveh.

The Fuente Magna Bowl at the Museum of Precious Metals in La Paz.

Close-up of the cuneiform writing on the Fuente Magna Bowl.

Two of the megalithic towers at Cutimbo. Both of them have serpents carved in relief.

One of the megalithic towers at Cutimbo with a serpent carved into the pillowed rock.



The curious megalithic chulpa north of Cuzco at Mauk’ allaqta.

The main walls of Sacsayhuaman seen from a distance, with Cuzco behind the hill.

The first terrace of walls at Sacsayhuaman and one of the main doors to enter the fortress.

The Wall of the Six Monoliths at Ollantaytambo with its narrow slivers of rock separating the slabs.

Several of the giant blocks strewn around at Ollantaytambo with their large bosses and grooves.

One of the giant blocks at Ollantaytambo with keystone cuts at each end.

A large block on the west side of the Sun Temple of Ollantaytambo with a vertical keystone cut.

Above: The classic view of Machu Picchu and its central plaza. *Left and Below:* Two views of the megalithic Main Temple at Machu Picchu.

CHAPTER SIX

ANCIENT TECHNOLOGY IN CUZCO

The point of philosophy is to start with something so simple
as not to seem worth stating,
and to end with something so paradoxical
that no one will believe it.
— Bertrand Russell, *The Philosophy of Logical Atomism*

For many people, Cuzco (also spelled Qosqo and Cusco) is the most important city in South America and certainly it could be called the tourist capital of this continent of mystery. Many thousands of travelers arrive in Cuzco from throughout the world every week and visiting South America without seeing Cuzco would be a terrible mistake. Many travelers use Cuzco as their base for visiting Machu Picchu, Sacsayhuama, Ollantaytambo and the Inca Trail. If they arrive from Lima, travelers often depart Cuzco by going higher in the mountains to Puno and Lake Titicaca.

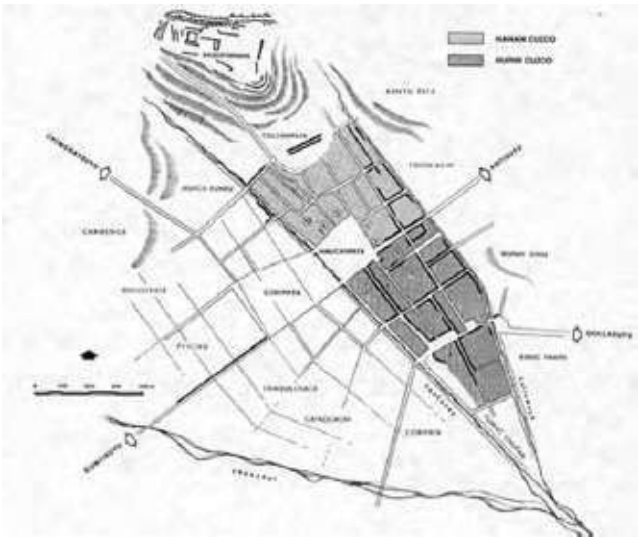
Jennifer and I were arriving from Lake Titicaca, on a comfortable bus from Puno (stopping at the Temple of Wiracocha along the way), and getting to Cuzco in the late afternoon. The city was bustling with activity, as usual, and once we had checked into our hotel, we hit the streets to find a restaurant to get some dinner.

Cuzco is a megalithic city and famous for its fine granite stonework, including the Qoricancha/Temple of the Sun. The huge megalithic fortress of Sacsayhuaman sits on a hill above Cuzco, overlooking the city. According to legend, Cuzco was founded by Manco Capac, said to be the first Inca or King (“Great Lord” in Sumerian) and the founder of the Inca Empire. While he is a

semi-mythical person whose actual time period cannot be pinpointed, archeologists typically say that Manco Capac founded Cuzco around 1200 AD, only about 300 years before the first voyage of Christopher Columbus. It is thought that the Inca Pachacuti made repairs to the Qoricancha/Sun Temple around the year 1438 AD. This Inca, who ruled from 1438 to 1471, was an expansionist likened to Philip II of Macedonia. He quickly spread Inca control, moving out of Cuzco first to the south, and then the north. Pachacuti is credited with building the incredible structures at Pisac, Ollantaytambo, Machu Picchu and other sites along the Urubamba River. The Spanish conquered Cuzco in 1533.

So, according to traditional archeologists, most of the megalithic sites around Cuzco were built within one hundred years of the arrival of the Spanish. Cuzco and Sacsayhuaman were settled only a couple of hundred of years before that. A growing number of archeologists are beginning to doubt the accuracy of these dates; my readers will know that I wholly believe that the megalith builders long predated the Incas. A *USA Today* article from March 14, 2008 announced that a pre-Inca temple had been found at Sacsayhuaman, and stated that previous carbon-14 dating at the fortress had returned a date of 1100 AD. Now Peruvian archeologists say that Sacsayhuaman was constructed by the Killke culture, which inhabited the area from 900 to 1200 AD, and Killke pottery has been found scattered throughout the site. One wonders if it is the pottery that is producing the date of 1100 AD now attributed to the entire site. At least pushing the date to pre-Incan times is a step in the right direction.

Many researchers believe the city of Cuzco was built in the shape of a puma. Pumas, serpents and lizards appear to be totem animals important to the builders of the megaliths, as images of these creatures are carved into the stones at various locations. Postcards detailing the outline of the puma vis a vis the modern cityscape of Cuzco are popular with tourists. Sacsayhuaman comprises the head of the puma, and the old historic district of Cuzco, including the Qoricancha, lies within the outlines of the body. The central plaza, called Huacapata or Plaza de Armas, actually lies outside the outlines between the legs; it is nevertheless said to be the “heart” of the puma.



Old map showing how Cuzco looks like a puma from above.

Building out your capital in the shape of a puma would take some serious planning, but would certainly not be beyond the capabilities of the megalith makers. What I find most interesting about this concept is that the puma would only have been visible from above; was Cuzco built for the "Sky Gods?"

The *Encyclopedia Britannica* has this to say about Cuzco:

> It is one of the oldest continuously inhabited cities in the Western Hemisphere. Formerly the capital of the extensive Inca empire, it retains much of its highly crafted early stone architecture, which is typically preserved in the foundations and lower stories of Spanish colonial structures. Cuzco was designated a UNESCO World Heritage site in 1983.

This is a nice little summation of the wondrous city, except for the inference that the "highly crafted early stone architecture" dates to the Inca empire. I maintain that the great stones were in place when the Incas arrived, and they were just one more civilization that kept Cuzco continually inhabited. When the Spanish came and built their colonial structures atop the great stones, they were the next.

The name Qosqo is said by many to be a Quechua word meaning "navel of the world." (Interestingly, natives of Easter Island call their home the "navel of the world.") The name is said to refer to Cuzco being at the center of the Inca empire, however if the city was founded and named by Manco Capac around 1200 AD, this would be putting the cart before the horse, as the empire building did not begin in earnest until the 1400s.

According to Wikipedia, the word originates from the Aymara phrase *qusqu wanka* (“rock of the owl”), which concerns the Aymara foundational myth of the Ayar Siblings. In one version of this legend, the Ayar brother Ayar Auca was able to acquire wings. He flew to the future site of Cuzco and turned himself into a rock, thereby claiming possession of the site for the city that was to come.

If the name for Cuzco is really an Aymara word, this gives credence to Cuzco being an older city than the Incas, already existing during the time of, or shortly after, the heyday of the Tiwa-naku-Puma Punku and Pucara cultures who it seems are the megalith builders or their direct descendants. We have seen that Aymara may itself be derived from ancient Sumerian with many words having essentially the same meaning in both languages. It would be interesting to determine how “rock of the owl” would be said in Sumerian.

Old map of Cuzco, Squier, 1877.

Cuzco was divided up during Inca times into two sectors, one being *urin* and the other being *hanan.* Each of these sectors was divided again so that Cuzco was in four quarters with a road running out of each quarter to the four quarters of the Inca Empire: to the northwest, *Chinchasuyu;* to the northeast, *Antisuyu; Qontisuyu* to the southwest; and *Qullasuyu* to the southeast. Note that the Inca

empire was not divided according to the cardinal directions in a strict north-south-east-west pattern, but one that reflected its geography and the way that the great Andes range goes through the continent. *Antisuyu* is the northeastern area of the Inca empire, and this is the area of dense jungles that cover the eastern slope of the Andes, an area thought to contain all sorts of undiscovered cities like Paititi, one of the legendary lost cities of the Incas.[1]

The Stone of Twelve Angles and the Serpent Stones

On arriving in Cuzco, I am always happy to see the bustling shops, restaurants, cantinas, markets and bookstores that reflect a vibrant economy that attracts plenty of tourists and other visitors to keep it all moving at a steady speed. It is a tourist and traveler focal point that earns its epithet of the Navel (or Center) of the World. Indeed, when one is in Cuzco, one does feel like it is the center of the world. At any time of the year people from all over the world, as well as from all over Peru, are walking down the old cobblestone streets looking in shops or wondering at the astonishing stone architecture. Even the Spanish churches are interesting, although their construction is far inferior to the more ancient megalithic walls of Cuzco. In some cases the churches still have the original megalithic walls intact such as at the Qoricancha-Santo Domingo Priory and the Nazarenas Monastery on Palacio Street.

Everyone ends up at the main central plaza, the Plaza de Armas, at some point. Here, shops and restaurants abound. In the afternoons, I often take some time to sit in the park in the middle of the plaza and watch the taxis circle in an endless loop. Suddenly a taxi stops and passengers jump in; children with balloons come laughing by and a shoeshine boy eyes you eagerly. Life’s hectic pace seems to pause briefly here.

I always visit the famous “stone of 12 angles” when I get into town, which is only a block or so from the main square. Up the street forbidden to cars called Hatunrumiyoc, the famous “stone of 12 angles” is nestled in one of the extant ancient stone walls of Cuzco, and is the “poster stone” for the ability of the builders to dress and place stones so exactly that a piece of paper could not be inserted between them to this day. It is featured on many postcards, and even on the label of the local Cusquena beer. This brewery was built by the Germans during WWII and it is the only major industry within the city limits of Cuzco. Many people think it is Peru’s best tasting beer, and it may be the only beer in the world that features a megalithic stone on its bottle—unless there is some Stonehenge Ale out there somewhere.

Near here are the massive walls of the so-called Palace, with finely cut

polygonal blocks of stone all fitted as if it were a piece of art made of granite. Right around the corner is the small section of wall where it looks like a llama was purposely inserted, made with different size blocks, some small, fitted among the larger megalithic boulders. It is this kind of playful artwork in the stone that makes us think that the builders had an easy time of it, and megalithic construction was not the excruciating process that we imagine.

The famous “stone of 12 angles” in Cuzco.

If one continues up this alley, one arrives at an area known as San Bias. From here one can make the long walk up to Sacsayhuaman along the stream that comes down from the hills around the fortress. Walking back down the alley, past the famous “stone of 12 angles,” the cross street here is called San Agusttin to the left and Palacio to the right. Taking a right leads to a small plaza and the Nazarenas Monastery. This curious structure, with a luxury hotel called Monasterio right next to it, is a megalithic structure in a style that is very similar to those seen at Cutimbo and Sillustani. If you look carefully, you will see snakes cut in relief on the perfectly cut and fitted granite blocks. Similar snakes, and sometimes lizards, are cut in relief at Cutimbo and Sillustani, and are also used on ancient Yezidi temples in northern Iraq—an area that was once part of Sumeria. Photos of these “serpent” temples in northern Iraq show an iconography that is identical to that found at Cuzco, Cutimbo and Sillustani. Look for other serpents cut into megalithic blocks at various sites in Peru—one can be found at Sacsayhuaman.

Saint Dominic’s Priory and the Temple of the Sun

The Avenue of the Sun, once the main street of Cuzco and still a bustling thoroughfare lined with banks, shops and hotels, runs downhill from just outside the Plaza de Armas. A few blocks down is the Qoricancha, the ancient Sun Temple that was turned into a church and monastery by the early Spanish and is slowly being restored to reveal the astonishing original stonework. An even better way to reach the Qoricancha is to walk down the alleyway called Loreto which comes down from the center of the Plaza de Armas. This narrow lane is lined on both sides with long, unbroken stretches of the original stonework of Cuzco, and one can get the feeling of being transported back in time to “the land of the giants.”

The Qoricancha/Convento Santo Domingo is built on a hill, and from the Avenue of the Sun you can see the ancient curved walls of the original megalithic construction. The early Spanish colonizers seized the building in November of 1533 and made it their headquarters during the early conquest; it later became the main church of the city. A particularly strong earthquake hit Cuzco on May 21, 1950 that caused severe damage all through the city. Saint Dominic’s (which is variously called a priory, convent or monastery), a building still owned by the church, but run as museum, had much of its Spanish architecture come crashing down in a pile of rocks. It was at this time that much of the megalithic masonry of the original building was exposed for the first time. Until then, some walls had only been seen in old prints, and much of what we see today has not been visible for hundreds of years. Fortunately, the restoration work done over the past 60 years has been done in such a manner as to highlight the ancient stonework of the Qoricancha and monastery. In fact, some areas are protected by plexiglass shields.

Old print of the Qoricancha, Squier, 1877.

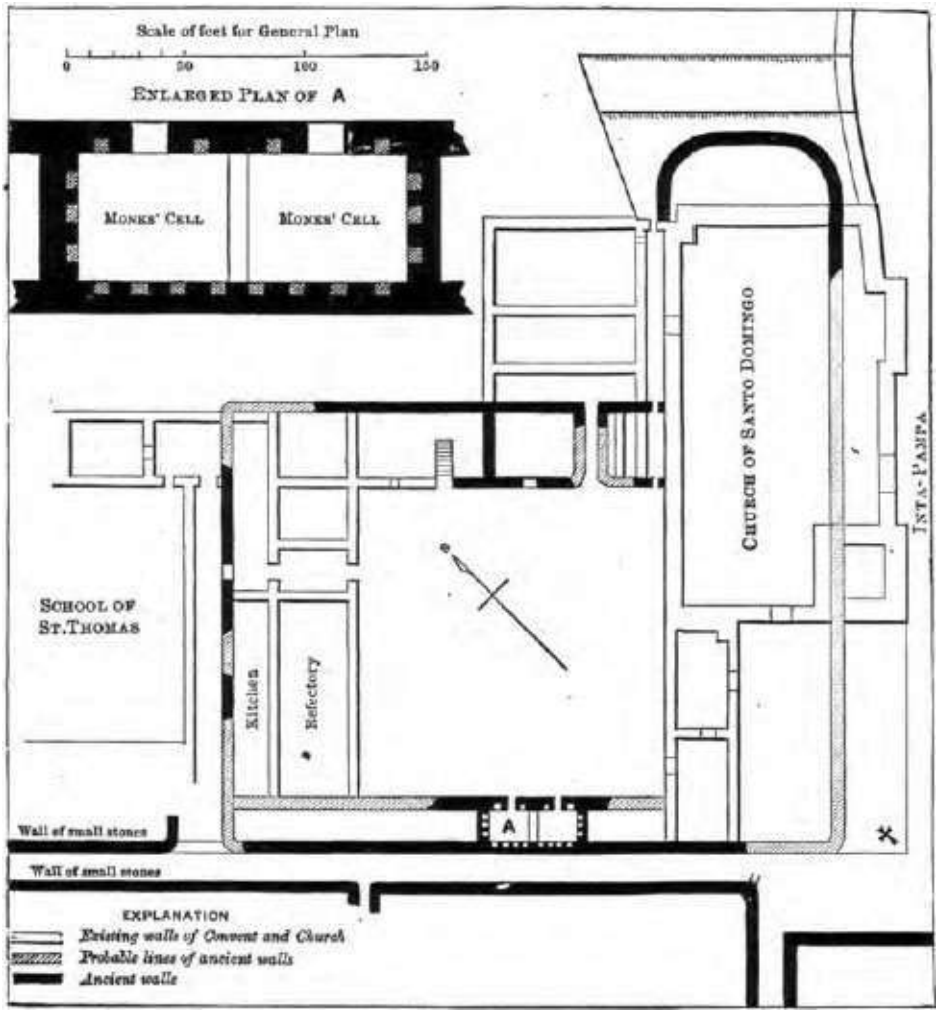
Cuzco has been hit by a number of powerful earthquakes, including one in 1650 (300 years before the 1950 earthquake) and a quake in 1941. There are frequent earthquakes throughout the Andes, and there must have been some powerful earthquakes in pre-colonial times. In the last chapter I talked about the cataclysmic legends of Tunupa told by the Aymaras of Lake Titicaca.

The word Qoricancha or Coricancha is said to come from the Quechua words *Quri* (gold) and *Kancha* (temple) therefore meaning the “Golden Temple.”

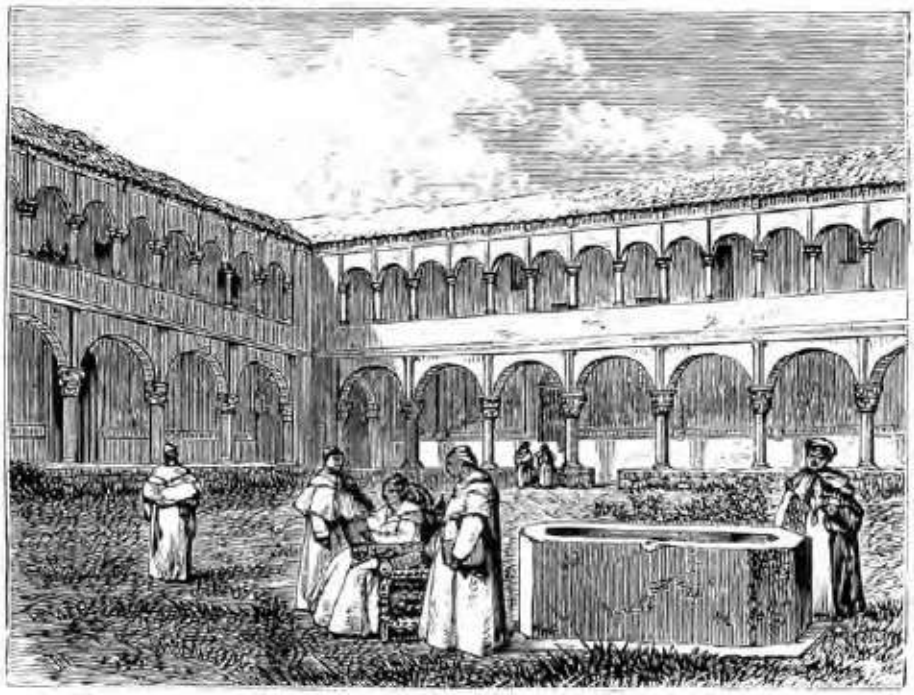
Apparently, during the Inca Empire it was called the *Inti* (Sun) *Kancha* and was therefore the "Sun Temple." Alternately it was called *Inti Wasi*, or "Sun House."

It is said to have been the most important temple in the city of Cuzco, though the temple with the serpents on the Plaza las Nazarenas must have been an important center as well. The Peru Cultural Society of Boston University published this description of the Qoricancha on its web site disover-peru.org:

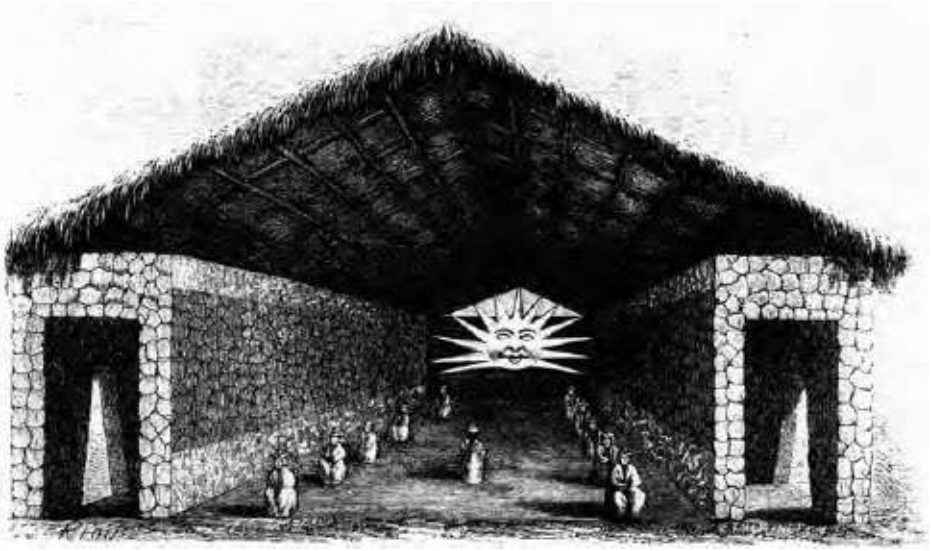
> ...It was the religious center of the empire and was reserved for the Sapa Inca [Emperor], his immediate family, priests and the chosen women to worship. Although it was meant to be a center for pilgrimage, people were not allowed to go inside.
>
> The building contained six rectangular chapels dedicated to each of the celestial gods in the Inca religion: Inti or Sun, Moon, Stars, Thunder and Wiracocha. A separate chapel was dedicated to the huacas from conquered territories as the Incas believed that these idols would add power and allow them to control the new territories. An image of each god made of solid gold resided in its own temple. At the eastern end of the courtyard was the representation of the Sun, a huge plate of solid gold. Under it, seated on golden thrones sat the mummies of previous Sapa Incas. The Sapa Inca would often worship at this temple and ask the mummies for advice.
>
> Coricancha was a magnificent building, an architectural marvel. Its walls were covered with sheets of gold and silver. Gold was a sacred metal thought to be the sweat of the sun and the tears of the moon. Archeologists think that Coricancha was serviced by a staff of four thousand. High priests and priestesses or aellas served the gods. These women were chosen for their beauty and worked in a secluded convent called the Accllahuaci. They served by cooking food for the gods, weaving fine clothes for the Sapa Inca and making daily offerings to the gods.
>
> Unfortunately the original temple was modified by the Spanish who built a church using the original walls of the temple. The gold and silver sheets covering the walls and all other objects were appropriated by the Spanish.



Jennifer and I bought tickets and entered into the Convent of Santo Domingo. Immediately we were in the courtyard of the Qoricancha and some rooms with megalithic construction were on our left. We examined them and took some photos. These would have been the rooms used as chapels by the Incas. At the end of this wall with its perfectly made rooms were some loose stones and a model of the Qoricancha as archeologists think it probably looked before the conquest. It is an impressive building even today with high walls on many of the sides. As one walks around, it is clear that this is a highly crafted and finely made structure.



Old print of the Qoricancha showing the monolithic stone basin, 1865.



Old print of the Qoricancha by Paul Marcoy, 1869.

The stones at the end of the wall, where the model of the ancient structure can be seen under plexiglass, have keystone cuts in them. The same keystone cuts we see at Puma Punku and Tiwanaku are also at the Qoricancha. They are also at Ollantaytambo, where we are headed next. Why are we seeing these Tiwanaku-style keystone cuts in Inca buildings? Is this proof that that many of these buildings are in fact pre-Inca, and built by an earlier culture that also built

at Tiwanaku? This would seem to be the case.

Some of the blocks at the Qoricancha are curious in that they have double keystone cuts in the T-shape. These are basically doubly difficult to make, and make it seem like the stonecutters were just showing off. They were cutting into very hard rock, granite or basalt in most cases

There is a central courtyard in the Qoricancha which is open to the sky. In the center of it is a solid—monolithic—stone box of granite. It is similar to the "coffin" inside the King's Chamber of the Great Pyramid of Egypt. Since it is outside, and usually surrounded by flowers, it is known as the Inca Basin. What the function of this basin was is unknown; perhaps it simply held water. It is also called the Inca Ceremonial Fountain, but we don't know what "ceremonies" it was involved in. It is solid granite and weighs a ton or more. It is finely made with sharp corners on the inside of the basin; exact interior angles are very difficult for a stonemason to create.

It has been suggested that such granite boxes are cut to very specific dimensions and are sound-harmonics generators. Granite—which has quartz crystal imbedded in it—can resonate when certain frequencies and generated sounds are applied to it. Sound frequencies have been studied and claimed to be able to levitate stones with a sonic "anti-gravity" field. NASA has done studies on "acoustic levitation," and witnesses have claimed to have viewed, and even filmed, Tibetan monks using sound to levitate stone blocks onto a cliff to facilitate the building of a hermitage.

Is the Inca basin at the Qoricancha some similar sonic amplifier? Perhaps something that was used to transport megalithic building blocks?

Stepping to the other side of the courtyard, one comes to a very interesting wall which has a niche that is cut and drilled—in a perfect, power tool fashion—on a precision granite doorway. It once held some sacred object that we can only wonder about. It may have been a simple object, tied with golden cords and stretched in front of the door. This is what the mainstream archeologists basically imagine.

What if it was something more complex? Something that was quite advanced, like a machine of some sort? As we have seen, this kind of stonework is done with power tools which usually require electricity. Was some special electrical device fixed to this doorway? A "magic" light in the temple? Was this some high-powered stargate to another planet or dimension?

We can only wonder what this special building, and this door in particular, was built for. It is certainly a precision building, one that was historically covered in gold plate. Was it the ancient world's first "Gold Museum" where

pilgrims could come and gaze in wonder at this marvel of gold and megalithic construction? Like Tiwanaku, it would have been a place of magnificence and a beacon of advanced engineering. Greater megalithic Cuzco lies outside the doors of the Qoricancha, which is just one feature of an ancient city that still boggles the mind!

Old print of the walls on the outside of the Qoricancha, Squier, 1877.

Here is a city that was built to be virtually indestructible, and it may have already lasted for thousands of years ! While modern-day historians typically maintain that the Incas built it only 200 years before the Spanish arrived, they at least have to admit that the construction is the same cyclopean construction that we also see in Egypt, Europe, Asia and the Middle East, as well as on Pacific Islands. While some of the cyclopean construction is known to be thousands of years old, some of it may be more recent—but how recent? And why construct in such a manner if it is difficult? Indeed, when we take a look at the hill above Cuzco, we will see something that would appear to be very difficult to make: the cyclopean fortress called Sacsayhuaman.

The Cyclopean Fortress of Sacsayhuaman

After returning to our hotel, we met Christopher Dunn and the World Explorers group for lunch. Then we took a trip up to the top of the hills above Cuzco to the site of Sacsayhuaman. This megalithic site is still under excavation and is one of the great tourist attractions of Cuzco.

We boarded a minibus and headed up the steep road that goes to the Sacsayhuaman fortress, plus the archeological site of Qenko and the Christ statue that can be seen lit up over the city at night. We fished around for our Cuzco Tourist Tickets that grant access to Sacsayhuaman and several other sites and presented them to the ticket man at the gate. A large map of the site was on display at this official control area and we paused briefly to look at it. Then, we plunged forward into one of the greatest and most impressive megalithic sites in the world.

Sacsayhuaman looks like a great green lawn and park with a green and rocky hill to one side and huge, zigzagging walls of interlinked stone blocks on the other side. One of the early times I visited here, around 1985, I saw a group of nuns playing volleyball on the lawn. At other times I have been here during Inti Raymi, the Sun Festival held every June, and walked among the walls with thousands of other people. It can be a very quiet and calm spot, or it can be the site of great festivals or, conversely, battles.

Sacsayhuaman is 755 feet (230 meters) above Cuzco and the *Encyclopedia Britannica* says that the fortress is "cyclopean." Cyclopean construction consists of very large stone blocks that are fitted in a polygonal fashion. It is named for the legendary one-eyed Greek giants known as the Cyclops, and one might imagine that only such monstrous giants could lift and construct such large walls. Cyclopean construction can be seen at certain ancient ruins in Greece such as those at Delphi and Mycenae.

It had rained earlier in the day and as we walked into the great lawn that is the main area where tourists gather, there were only a few visitors walking in front of the three massive terrace walls that form the east side of the structure. Although parts of Sacsayhuaman contain granite bedrock, much of it curiously glazed and smooth—as if it were melted and reformed or possibly smoothed by a glacier—most of the huge blocks that form the walls are limestone.

The blocks are cut in jigsaw shapes and are so closely fitted together that the precision is astonishing to tourists and archeologists alike. Engineers, stonemasons and architects are even more impressed than archeologists because they know how difficult it would be to cut and fit such gigantic blocks of stone together where not even a razor blade can be inserted between them.

This precision, combined with the variety of their interlocking shapes, creates an earthquake-proof wall of megaliths that can move with the shock of an earthquake but retain their structural stability where other walls would crumble and fall. The walls lean inward slightly as well, which provides a bit more stability than walls that are perfectly vertical. Buildings in Cuzco are made of the same construction with slightly smaller blocks of stones made of granite, rather than limestone.

The longest of the three terraced walls at Sacsayhuaman is about 400 meters (over 1200 feet) and all three walls are about 6 meters 920 feet) tall. The largest of the limestone blocks are on the first terrace and estimates for the weight vary from 128 tons to almost 200 tons. The estimated volume of all the stone that remains at Sacsayhuman is over 6,000 cubic meters. However, there were many more blocks of stone at Sacsayhuaman, including several towers, but most of them were removed in early Spanish colonial times to build many of the churches and other buildings in Cuzco that can be seen today.

A great battle was fought at Sacsayhuaman during the Siege of Cuzco by the Inca emperor Manco Inca Yupanqui (often called just Manco Inca). Manco Inca had been set up by the Spanish as a puppet figurehead, but they treated him so badly he escaped from Cuzco and fled to Vilcabamba where he gathered forces to try to retake the Inca capital. His forces laid siege to Cuzco from May 6, 1536 to March of 1537. During this time the Incas used Sacsayhuaman as a military storeroom and fortress and fixed their eyes on Cuzco below, where 190 Spaniards took refuge in two large buildings near the main square.

The Spaniards had several thousand Indian auxiliaries who fought with them against the Incas and some of them were also holed up in the large buildings near the square; though the siege lasted for nearly a year, the Incas could never dislodge their enemies from the center of Cuzco. The Spanish would occasionally make raids into other parts of the city to commandeer food and other supplies. Finally, in early March of 1537 the conquistador Juan Pizarro led 50 horsemen and several hundred Indian auxiliaries out of central Cuzco and past a section of the Inca army—thought to number about 100,000 men according to some estimates—and up the hill to the west of Sacsayhuaman. They then turned around and attacked Sacsayhuaman from the hills outside the city. They charged the huge terraced walls of the fortress, beyond which were the towers and other buildings. Juan Pizzaro was struck in the head by a large stone and the assault was called off. He died of these injuries a few days later.

An aerial photo of the cyclopean fortress of Sacsayhuaman above Cuzco.

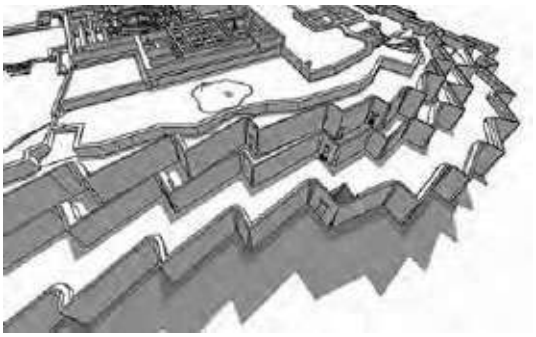
On the day after the first assault, the Spanish resisted several counterattacks on their camps near Sacsayhuaman and then attacked the fortress at night, this time with scaling ladders. They were successful in scaling the walls and forcing the Inca commanders to take refuge in two tall towers at the very top of the fortress, overlooking Cuzco. They eventually took these towers as well, and the capture of Sacsayhuaman was complete. The Spanish now used the megalithic fortress as their own garrison and continued to battle with Incas around Cuzco and the Sacred Valley. Hernando Pizarro, encouraged by their success at Sacsayhuaman decided to attack Manco Inca's headquarters at Ollantaytambo, but was defeated. Hernando returned to Cuzco and Manco Inca, after another assault on Sacsayhuaman and Cuzco failed, withdrew to remote Vilcambamba beyond Machu Picchu to set up a new capital for the Inca subjects who were not yet ruled by the Spanish. It was this lost city of Vilcabamba that Hiram Bingham was searching for in 1911 when he was led by local farmers to the discovery of Machu Picchu.

The Stones of Sacsayhuaman

Much of the fighting that occurred in and around Sacsayhuaman was critical for maintaining control over Cuzco. The conquistador Pedro Sancho had visited the hilltop complex before the siege and mentioned the labyrinth-like quality of the complex. He said that it held a large number of storage rooms filled with all sorts of items, and also noted that there were buildings with large windows that looked over the city of Cuzco. These structures, like so much of the site, have

long since been destroyed. Pedro Pizarro described storage rooms that were within the complex, which were filled with military equipment.

Once Cuzco was secure and the threat of Manco Inca had passed, the Spaniards began to dismantle Sacsayhuaman and it became a source of stone material for building Spanish Cuzco. The site was destroyed block by block to build homes for the wealthiest Spaniards, and new governmental and religious edifices. Said the half-Inca chronicler Garcilaso de la Vega in his 1609 book *Comentarios Reales de los Incas* (roughly, *Royal Commentaries of the Incas):* "to save themselves the expense, effort and delay with which the Indians worked the stone, they pulled down all the smooth masonry in the walls. There is indeed not a house in the city that has not been made of this stone, or at least the houses built by the Spaniards."[59]



A diagram ofthe design of Sacsayhuaman.

So the dismantling of this giant fortress began, and the colonial city of Cuzco was created. Only the largest and heaviest stones, or those interlocked with such cyclopean stones, were left at Sacsayhuaman and this is what is seen by tourists today. We can only wonder how impressive this site must have originally been; even today it seems as if it had been built by the Devil, as the early Spanish believed.

Indeed, the Spanish, who had a higher technology than that of the Incas—or so they thought—could not figure out how the large stones had been moved, lifted, cut and fitted with such precision, something also seen at Tiwanaku, Puma Punku and the towers at Cutimbo and Sillustani. Had the Incas only built Sacsayhuaman a couple of hundred years before the arrival of the conquistadors? Garcilaso de la Vega thought so, being proud of his Inca heritage, as his mother had been an Inca princess. He called himself "El Inca," "Inca" in this sense meaning "royal elite." That is what the Incas were—a special royal elite who governed from Cuzco and Quito over a general populace who were not Incas but their subjects.

The standard explanation of how Sacsayhuaman was built can be found on Wikipedia. Says Wikipedia:

> The Inca used similar construction techniques in building Sacsayhuaman as they used on all their stonework, albeit on a far more massive scale. The stones were rough-cut to the approximate shape in the quarries using river cobbles. They were then dragged by rope to the construction site, a feat that at times required hundreds of men. The ropes were so impressive that they warranted mention by Diego de Trujillo (1948:63 [1571]) as he inspected a room filled with building materials. The stones were then shaped into their final form at the building site and then laid in place. The work, while supervised by Inca architects, was largely carried out by groups of individuals fulfilling their labor obligations to the state. In this system of "mita" or "turn" labor, each village or ethnic group provided a certain number of individuals to participate in public works projects.
>
> Although multiple regions might provide labor for a single, large-scale state project, the ethnic composition of the work-gangs remained intact, as different groups were assigned different tasks. Cieza de León (1976:153—154), who visited Sacsayhuaman two times in the late 1540s, mentions the quarrying of the stones, their transposition to the site, and the digging of foundation trenches. All this was conducted by rotational labor under the close supervision of Imperial architects.

Wikipedia goes on to mention Jean-Pierre Protzen, a Swiss professor of architecture, now at the University of California Berkeley, who has shown "how the Inca built long and complex ramps within the stone quarries near Ollantaytambo, and how additional ramps were built to drag the blocks to the construction above the village. He suggests that similar ramps would have been built at Sacsayhuaman."[50, 51]

In a fascinating article in *Scientific American* (February, 1986), Protzen relates his experiments in duplicating the construction of "Inca" structures. Protzen spent many months around Cuzco experimenting with different methods of shaping and fitting the same kinds of stones used by the megalith builders, who he assumed were the Incas. He found that quarrying and dressing the stones were tasks easily accomplished using the stone hammers found in abundance in the area. He repeatedly dropped these hammers, made of a hard stone, against

the larger blocks from eye level. Each impact chipped away a small amount of rock, and he caught the hammer as it bounced back up to easily repeat the maneuver. Even the precision fitting of stones was a relatively simple matter, he says. He pounded out the concave depressions into which new stones were fitted by trial and error, until he achieved a snug fit. This meant continually lifting and placing the stones together, and chipping at them a little at a time. This process is very time consuming, but it's simple, and it works—at least with smaller stones.

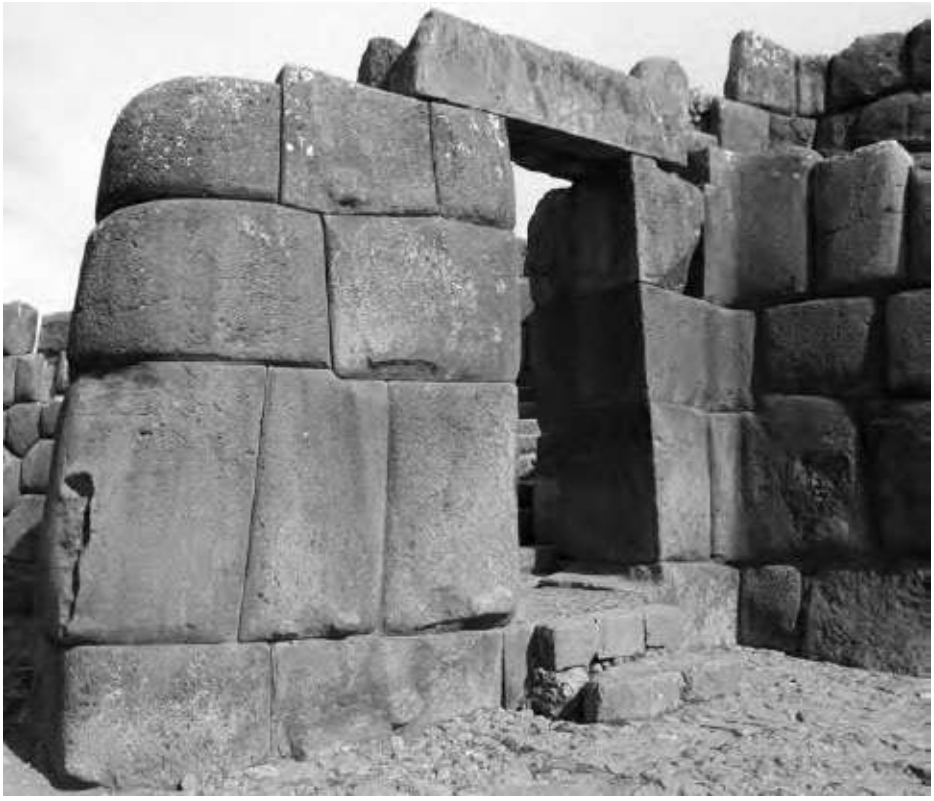
Protzen believes that Inca stonemasonry was surprisingly unsophisticated, though efficient. Yet even for Protzen, some mysteries remain. He was not able to figure out how the builders transported and handled the larger stones. His fitting process necessitated the repeated lowering and raising of the stone being fitted, with trial-and-error pounding in between. He admitted that he does not know just how 100-ton stones were manipulated at this stage—and some stones are actually far heavier!

According to Protzen, to transport the stones from the quarries, the Incas built special access roads and ramps. Many of the stones were dragged over gravel-covered roads, which in his theory gave the stones their polished surfaces. The largest stone at Ollantaytambo weighs about 150 tons. It could have been pulled up a ramp with a force of about 260,000 pounds, he says. Such a feat would have required a mimimum of some 2,400 men. Getting the men seemed possible, but where did they all stand? Protzen says that the ramps were only eight meters wide at most. Further perplexing Protzen is that the stones of Sacsayhuaman were finely dressed, yet are not polished, showing no signs of dragging. He could not figure out how they were transported the 22 miles from the Rumiqolqa quarry.

Protzen 's article reflects good research, and points out that modern science still cannot explain or duplicate the building feats found at both Sacsayhuaman and Ollantaytambo. Continually lifting and chipping away at a 100-ton stone block to make it fit perfectly is just too great of an engineering task to have been practical. Protzen's theory would work well on the smaller, precisely square, later construction, but fails with the older megalithic jigsaw construction beneath. Perhaps the theories of lévitation and softening stones cannot be discarded yet! One last intriguing observation which Protzen makes is that the cutting marks found on some of the stones are very similar to those found on the pyramidion of an unfinished obelisk at the Aswan quarry in Egypt. Is this a coincidence, or was there an ancient civilization with links to both sites? We will discuss Protzen more extensively in the next chapter as he has made the most

detailed examinations of the megalithic stonework around Ollantaytambo, one of the more mysterious sites around Cuzco, known for its gigantic granite walls and colossal “lazy stones” that never made it all the way to the main structures at the site.

Wikipedia also mentions Vince Lee, an American author, architect, and explorer who has studied various ancient sites in Peru and privately published several monographs including *Six-Pac Manco* and *The Building of Sacsayhuaman.* Lee theorizes that the blocks at Sacsayhuaman were first precisely cut and dressed, and then towed up a ramp with ropes and held in place above one of the giant walls, where they would be placed on top of a stack of logs. The logs would be removed one at a time to lower the stones into place. No matter what the explanation, a tremendous amount of human labor is supposed to have taken place, all to move gigantic blocks of limestone or granite weighing 100 to 200 tons in many cases. It remains to be explained why a primitive civilization, supposedly without knowledge of the wheel or written language, would want to build in such a difficult fashion? We do not try to build structures this way today, with all of our power tools, cranes and heavy machinery. Why would they want to? No one seems to have a good answer, so I am forced to conclude that building in such a fashion was not as incredibly difficult as it would seem to us, but actually was easy for whoever did it.



One of the great doors at Sacsayhuaman, this one with a serpent carved on it.

As for the “impressive ropes” seen by Diego de Trujillo, these most certainly did exist. Such ropes were made throughout the Inca empire—and before—and were mostly used for the rope suspension bridges that were hung over the many gorges within the Andes. Some of these bridges were amazing feats of engineering in themselves and spanned huge gorges in the mountains. These bridges were made of massive interwoven ropes that were very strong, but entirely feasible in their simple construction. That similar ropes may have been used in the moving of the large megaliths around Cuzco, including at Sacsayhuaman, is certainly possible, but it seems unlikely that the ropes seen by Diego de Trujillo were the ones used in building the megaliths at Sacsayhuaman, as this must have been done many centuries before. Indeed, when he saw these ropes, Sacsayhuaman was being deconstructed by the Spanish who needed all of the stones for themselves. Certainly, no one was hauling these large stones with ropes in the way described during the time of the conquest, or immediately before.

As for Cieza de Leon, he also visited Sacsayhuaman during the time it was being demolished. While he may have seen a quarry and asked the locals how it was possible for them to have built with such gigantic blocks of stone, his observations and conclusions do not give us a clear idea of how and when this was done. In many ways what he and Garcilasco de la Vega have done is to attribute the building of Cuzco and Sacsayhuaman to the Incas, who had only consolidated their empire a hundred years or so before the Spanish arrived, and probably inherited many of the buildings that they occupied from an earlier culture. In fact, it would seem that the builders of Tiwanaku and Puma Punku were also the builders of Cuzco and Sacsayhuaman.

As has been noted, Peruvian archaeologists discovered additional ruins at the periphery of Sacsayhuaman. These structures, they concluded, had been built and occupied since at least 1100 AD and are pre-Inca. They attribute the building to the Killke culture and, although they say the Incas then came and added to the site, there is some suggestion that Sacsayhuaman, including the megalithic foundation, was built before the Incas ever arrived in Cuzco. In fact, Sacsayhuaman may still be hundreds or even thousands of years older than the Killke culture. There seems to be no reason why building in the Cuzco and Sacsayhuaman area would have only begun in 1100 AD when megalithic building had begun much earlier in other areas, such as circa 1200 BC at Chavin.

The Tunnels and Legends of Sacsayhuaman

As we walked around Sacsayhuaman we stopped at a number of interesting spots, including a rounded cornerstone with what seemed to be a serpent cut deeply into the rock. We also went up the hill opposite the three gigantic terraces to what is called “the seat of the Inca.” This seat is perfectly cut out of granite and highly squared and polished. It appears to have been cut by a gigantic saw and then squared.

I pulled out my pocket compass to check the orientation of this strange solid-rock “seat.” My compass started to spin one way and then another as I lowered the compass to the flat rock face.

“This stone is magnetized,” I said to our small group. “This seat has some special magnetic field around it. Maybe they cut this seat here because of the magnetic field, or maybe a magnetic field was put into the rock!”

People gathered around and watched the compass needle spin as I moved it around along the face of the stone. The compass was being manipulated by the magnetic field in the rock.

“Maybe harnessing some powerful magnetic field was necessary for moving the rocks,” I said.

“Or maybe it was some sort of magnetic healing spot,” suggested Jennifer. We were all mystified, but moved on up the hill to an area west of the main plaza.

This area has more granite bedrock covering the slope of the hill that has been smoothed and glazed over by intense polishing. Some children were sliding down one of the grooves which was very similar to a playground slide. I wondered if constant playing and sliding down the rocks over hundreds of years had created this polish? The problem with this theory is that other areas are also highly polished, areas where this constant sliding would not have occurred.

“Does it look like a glacier cut these grooves into the granite?” I asked Chris Dunn.

He looked at the glazed grooves and nodded. “They do sort of look like a glacial smoothing affected the rock but it doesn’t look like there were glaciers here,” he said. “Perhaps this is some sort of artificial polishing.”

Indeed, it looks as if the stone has been melted and reformed into what seems like a very smooth lava flow of red granite. The concept of being able to melt stone and reform it into perfectly shaped stones, or smooth “flowing” granite like the “slide” at Sacsayhuaman, will be discussed shortly.

Our group walked down to some areas of Sacsayhuaman that were excavated only a few decades ago and include strangely carved “upside down” boulders, nicely cut and placed blocks typical of Sacsayhuaman and Cuzco, and some

curious short tunnels. It is this area, among others, that is said to contain some of the famous tunnels that go beneath Sacsayhuaman, and Cuzco as well.

In my book *Lost Cities and Ancient Mysteries of South America* I tell the story of the lost treasure of the Incas, a treasure that was kept at the Qoricancha and later taken to secret rooms beneath Sacsayhuaman and eventually to a still-lost city in the jungles, known as Paititi. Just prior to the arrival of the Spanish in Peru, the Inca empire had fallen into civil war led by two brothers, Atahualpa from Quito and Huascar from Cuzco. Their father, Inca Huayna Capac, had died in 1527 and he divided the empire, which had recently expanded into what is now Colombia, between the two brothers, giving Atahualpa the northern part, centered in Quito, and the southern part to Huascar with Cuzco as the capital.

Originally, Huascar had Atahualpa imprisoned but Atahualpa was able to escape and make his way back to Quito where he organized his army, which included commanders who had fought for his father in Colombia. The two brothers fought for control of the Inca empire during much of the years 1527-1532. In April of 1532 Atahualpa and his generals captured Cuzco and executed Huascar and his family. Atahualpa now took up residence in Cuzco and had his family move there.

Atahualpa was returning to Cuzco, now the capital of a unified Inca empire again, from Quito with his army when he encountered, at the town of Cajamarca, the Spanish army led by Francisco Pizzaro with 62 horsemen and 106 foot soldiers. In a bold move, this small force captured Atahualpa while having an audience with him, and threatened to kill him. The Inca, seeing the Spanish taking gold and other metals while looting his army camp, offered to fill the room he was kept prisoner in full of gold. The Spanish accepted this offer, and then waited for some weeks for a caravan to arrive from Cuzco with gold and other metal objects. Three Spanish emissaries sent to Cuzco to see this golden capital of the Incas returned to Cajamarca with fine objects taken from the Qoricancha. They brought an immense ransom of gold and silver vessels loaded on the backs of 200 staggering, sweating porters.

Not surprisingly, once the ransom was paid, Atahualpa was not released. A rumor was spread that Atahualpa was raising an army to storm Cajamarca. This being the only excuse the Spaniards needed to execute the Inca, he was condemned to death. Spaniards who had befriended Atahualpa advised him to convert to Christianity before his execution, which would allow the Dominican fathers to strangle him as a Christian rather than burn him at the stake as a heretic. He complied, was baptized and then strangled. This was done even though more gold was on its way, as part of a second ransom, worth much more

than the first.

The second ransom train of 11,000 heavily-packed llamas was on its way to Pizarro's camp. Loaded with gold, it had been sent by Atahualpa's queen from Cuzco. But when they heard of the Inca's assassination, the Indians drove the llamas in a different direction and buried the 100 pounds of gold that each animal carried. Later, when they realized that the Spanish would now march on Cuzco, they removed other special treasures form the Qoricancha, including 13 mummies of the previous Sapa Incas which were clad in gold, and sent them to tunnels underneath Sacsayhuaman, at least for awhile, and then on to a secret city called Paititi. Where this city lies is unknown, but it is thought to be in the Antisuyo quadrant of the Inca empire which is essentially the eastern mountain jungle areas. Some think that it is near Paucartambo or the Tres Cruces area nearby, while others think that it is to the east of Lake Titicaca, in the area around the town of San Juan del Oro.

One of the larger megaliths at the fortress of Sacsayhuaman above Cuzco.

Harold Wilkins mentions that Sir Clements Markham, who had a particularly keen knowledge of Peru, believed that the gold was hidden in the mountains behind Azangaro. The Cordillera de Azangaro is a wild sierra little known to foreigners, the name in Quechua meaning "place farthest away." It is believed that this was the farthest-eastern point in the Andean cordilleras which the old Inca empire dominated. Another version of this story says that the treasure was

hidden in a system of tunnels that goes through the Andes.[1, 22]

Curiously, Azangaro, which is both a town and a province along the northern and eastern shore of Lake Titicaca, is an area of mystery. The colonial church in the town of Azangaro is known as the "Golden Temple." The reason for this is not really known. Perhaps a portion of the gold of the Incas was brought here. Azangaro was important in the 1780 indigenous uprising in Peru led by Tupac Amaru II, who claimed he was directly descended from the last Inca, Tupac Amaru (the son of Manco Inca).

Tupac Amaru II was executed in Cuzco on May 18, 1781 and what remained of his rebellion continued to be centered around Azangaro. Did some of the ancient treasure of the Qoricancha somehow fund this uprising? Azangaro is just east of the strange town of Lampa, discussed in the previous chapter. Lampa was an ancient gold mining town and is famous for having tunnels beneath its very large church. Tunnels also feature in stories of Sacsayhuaman and Cuzco and the treasure of the Qoricancha. Cuzco was said to be connected to Lampa and even Tiwanaku by underground tunnels. Did these tunnels go on to Azangaro? It seems fantastic!

Even though much of the great treasure of the Incas was taken to hiding places, there was still plenty of it around to make each conquistador wealthy. Wilkins quotes John Harris, who says in his *Moral History of the Spanish West Indies*, "Nothing was so cheap, so common, so easy to be got as gold and silver... a sheet of paper went for ten Castillans of gold... Debts were paid in wedges of gold, and no Spaniard troubled if a creditor got twice the amount of his debt."[22]

Another incredible treasure story involves "The Garden of the Sun." Sarmiento, a Spanish historian (1532-1589), wrote that this subterranean garden was located near the Qoricancha. "They had a garden in which the lumps of earth were pieces of fine gold. These were cleverly sown with maize—the stalks, leaves and ears of which were all of gold. They were so well planted that nothing would disturb them. Besides all this, they had more than twenty sheep with their young. The shepherds who guarded the sheep were armed with slings and staves made of gold. There were large numbers of jars of gold and silver pots, vases, and every kind of vessel were cast from fine gold."

Shortly after the conquest of Peru, Cieza de Leon, part Inca and part Spanish, wrote:

> If all the gold that is buried in Peru... were collected, it would be impossible to coin it, so great the quantity; and yet the Spaniards of

> the conquest got very little, compared with what remains. The Indians said, ‘The treasure is so concealed that even we, ourselves, know not the hiding place! ‘
>
> If, when the Spaniards entered Cuzco they had not committed other tricks, and had not so soon executed their cruelty in putting Atahualpa to death, I know not how many great ships would have been required to bring such treasures to old Spain as is now lost in the bowels of the earth and will remain so because those who buried it are now dead.[22, 59]

What Cieza de Leon did not say was that, although the Indians as a whole did not know where this treasure lay, there were a few among them who did know and closely guarded the secret. Had these knowledgeable persons faded away through history or was there still some inner circle of initiates who knew the secrets of the hidden tunnels and the gold?

The Tunnels and the Gold

During Atahualpa’s imprisonment, his queen, who was now living in Cuzco had dispatched the 11,000 llamas to Cajamarca with the second ransom. But Pizarro had demanded, after seeing the previous treasures, that he be shown the source of this fabulous wealth before he would release the Inca. He had heard that the Incas possessed a secret and inexhaustible mine or depository, which lay in a vast, subterranean tunnel running many miles underground. Here was supposedly kept the accumulated riches of the country.

However, Harold Wilkins says that there is a legend that the queen consulted the Black Mirror at the Temple of the Sun, a sort of magic mirror similar to that in the story of Snow White. In it she saw the fate of her husband, whether she paid the ransom or not. She realized that she must not reveal the secret of the tunnels or wealth to the gold-crazed conquistadors, and that her husband and the empire were doomed.

The horrified queen ordered that the entrance to the great tunnel be closed under the direction of the priests and magicians. A large door into the rocky wall of a cliff gorge near Cuzco, it was sealed by filling its depths with huge masses of rock. Then the disguised entrance was hidden under green grass and bushes so that not the slightest sign of any fissure was perceptible to the eye.[22]

Conquistadors, adventurers, treasure hunters and historians have all wondered about and searched after this legend. What incredible treasure did the Incas seal into these tunnels? And the tunnels themselves, when and how were

they made, and where do they go?

Most historians agree that the most precious verifiable piece of this treasure was the great Sun Disc, which was seen by the earliest Spaniards to visit Cuzco. It is said to have been fashioned after a human face of solid gold, radiating shafts of light as it blazed in the sun. It personified the Sun and the one god, the central creator of the cosmos. The ancient Incas worshiped the Sun, much in the same way that the Egyptians at the time of Akhenaton worshipped Aton the Sun, or Ra as he later became known.

The Sun Disc was a massive plate of purest gold, encrusted thickly with emeralds and other gems of superb size and quality. At dawn, the sun's rays fell directly onto this disc in the temple chamber, where it reflected light back onto gold everywhere, on the walls and ceilings. The cornices were made of gold, and a broad gold frieze, worked into the stonework, adorned the whole exterior of the temple. Two other smaller sun discs sat on each side of the main disc, and a second large disc much like the first was hung on the opposite wall, to reflect the light of the setting sun.[22, 59]

A smaller copy of the disc was at one time in the possession of one of Pizarro's men, Don Marcio Serra de Leguisamo. He had looted it from the Temple of Sun shortly after the kidnapping of Atahualpa. Leguisamo lost his smaller sun disc in an overnight gambling binge, and died poor. The sun disc was probably melted down into a gold bar and sent to Spain, "for the glory of the king."[22]

The legend continues that underneath the great Sun Disc in the Qoricancha at Cuzco sat the embalmed bodies of 13 former ruling Incas, in chairs of gold, standing on gold slabs. In these same chairs they had sat in life. The outraged Indians hastily hid these sacred mummies with the rest of the treasure in the tunnels.

Wilkins mentions that 26 years after the hiding of these treasures (including the mummies), Polo de Ondegardo, a conquistador, accidentally stumbled on the mummies of three kings and two queens, taken from the corresponding Temple of the Moon. All the mummies were stripped of their jewelry and broken into pieces by the treasure hunters.[1, 22]

So where is this system of tunnels beneath Cuzco and the Andes? And just what is the extent of these tunnels? The mummies of the Incas and much of the treasure are believed to still be hidden in the tunnels that run under Cuzco to the megalithic fortress of Sacsayhuaman. The old chroniclers say the tunnels were connected with the Qoricancha. The place where these tunnels started was known as the *Chinkana,* or "the place where one gets lost." There is some

confusion whether the entrance was at the Qoricancha or somewhere near it, while another entrance was at Sacsayhuaman. Even the official book published by the Domincan Fathers of Peru has a brief chapter about the tunnel system connecting the Qoricancha and Sacsayhuaman. Their book, *Saint Dominic Priory: Qorikancha,*[46] says:

> The Quechua word *chinkana* means "place where one becomes lost, labyrinth." According to one of Cuzco's most famous legends, since the time of the Incas there has existed a subterranean passage, with many side tunnels, which connects the fortress of Sacsayhuaman with Qoricancha. At Sacsayhuaman a carved rock can be seen, beneath which what is said to be the entrance to the Great *Chinkana* is located. It is said that countless treasures are hidden in the *Chinkana.*
>
> Writing towards the end of the 16th century, the chronicler Martin de Murua tells us, "They say that he [Prince Ausitopa], on the orders of his father [Topa Inca Yupanqui] made a path under the earth, from the fortress of the city of Cuzco, which dominates the city, to the famous temple of *Curi Cancha*... The mouth of this tunnel remains open to this day, and they call it *Chingana,* which means the place where one becomes lost, like that famous labyrinth of the island of Crete, although all has been lost now, for there is nobody who has succeeded in discovering where it leads... not even in the temple itself [Qoricancha] does anyone know. It is said that the Ynga [Inca] ordered that it be closed and completely walled up."
>
> The most well-known local story tells of how two students entered the tunnel at Sacsayhuaman and disappeared. After several days one of them managed to get out of the *Chinkana,* emerging at the other end, behind the main altarpiece of the Church of Saint Dominic, carrying in his hands a golden corncob, only to die a few days after his ordeal.
>
> The many recent attempts to confirm the existence of the Great *Chinkana* have all ended in failure.[46]

This entrance seems to have been well known up until the mid-1800s, when it was walled up and covered with dirt. In his book *Jungle Paths and Inca Ruins,*[63] Dr William Montgomery McGovern tells a slightly different version of the story and now a golden ear of corn has become a gold bar:

> Near this fortress [Sacsayhuaman] are several strange caverns reaching far into the earth. Here altars to the Gods of the Deep were carved out of the living rock, and the many bones scattered about tell of the sacrifices which were offered up here. The end of one of these caverns, Chinkana, has never been found. It is supposed to communicate by a long under-ground passage with the Temple of the Sun in the heart of Cuzco. In this cavern is supposed, and with good reason, to be hidden a large part of the golden treasure of the Inca Emperors which was stored away lest it fall into the hands of the Spaniards. But the cavern is so huge, so complicated, and its passages are so manifold, that its secret has never been discovered.
>
> One man, indeed, is said to have found his way underground to the Sun Temple, and when he emerged, to have had two golden bars in his hand. But his mind had been affected by days of blind wandering in the subterranean caves, and he died almost immediately afterwards. Since that time many have gone into the cavern—never to return again. Only a month or two before my arrival the disappearance of three prominent people in this Inca cave caused the Prefect of the Province of Cuzco to wall in the mouth of the cavern, so that the secret and the treasures of the Incas seem likely to remain forever undiscovered.
>
> Another story, which may well be derived from the same source, tells of a treasure hunter who went into the tunnels and wandered through the maze of tunnels for several days. One morning, about a week after the adventurer had vanished, a priest was conducting mass in the church of Santo Domingo. The priest and his congregation were suddenly astonished to hear sharp rappings from beneath the church's stone floor. Several worshippers crossed themselves and murmured about the devil. The priest quieted his congregation, then directed the removal of a large stone slab from the floor (this was the converted Temple of the Sun!). The group was astonished to see the treasure hunter emerge with a bar of gold in each hand.

Gold bars were more of an invention of the Spaniards and it is more likely that a life-size ear of corn or a huge golden peanut or other plant was brought out of the tunnels, as this was what was known to have been in the gold temples of Cuzco. However, since we know that keystone cuts and metal clamps were used at the Qoricancha, it is certainly possible that metallic "bars" were brought out of

the *Chinkana*. They could also easily have made such bars by hammering gold objects into ingots. And beyond that, any culture capable of making the keystone cuts and pouring molten metal into their finely cut megalithic walls would also have made a wide variety of metal molds of all sorts, including ones for knives, spearheads, swords and vessels of many types. These are the things we see in the museums in Cuzco and all around Peru—vestiges of a wealthy land of metals.

There have been a number of investigations into the *Chinkana,* and even the Peruvian government got into the act of exploring the Cuzco tunnels, ostensibly for scientific purposes. The Peruvian *Seria Documental del Peru* describes an expedition undertaken by staff from Lima University in 1923. Accompanied by experienced speleologists, the party penetrated the trapezoid-shaped tunnels starting from an entrance at Cuzco.

They took measurements of the subterranean aperture and advanced in the direction of the coast. After a few days, members of the expedition at the entrance of the tunnel lost contact with the explorers inside, and no communication came for twelve days. Then a solitary explorer returned to the entrance, starving. His reports of an underground labyrinth of tunnels and deadly obstacles would make an Indiana Jones movie seem tame by comparison. His tale was so incredible that his colleagues declared him mad. To prevent further loss of life in the tunnels, the police dynamited the entrance.[64]

More recently, the big Lima earthquake of 1972 brought to light a tunnel system beneath that coastal city. During their salvage work, workers found long passages no one had ever known existed. The following systematic examination of Lima's foundations led to the astonishing discovery that large parts of the city were undercut by tunnels, all leading into the mountains. But their terminal points could no longer be ascertained because they had collapsed during the course of the centuries.[64] Did the Cuzco tunnels explored in 1923 lead to Lima? As far back as the 1940s, Harold Wilkins, in his book *Mysteries of Ancient South America,* wrote that they did.[22] We have also already heard stories that tunnels went to Lampa and Tiwanaku.

Harold Wilkins tells the interesting story that sometime around the year 1844, a Catholic priest was called to absolve a dying Quechua Indian. Whispering quietly to the priest, the old Indian told an amazing story about a labyrinthine series of tunnels going back far beyond the days of the Inca emperors of the Sun. It was told under the inviolable seal of the confessional, and could not be divulged by the priest under pain of death. This story would probably never have been told, except that the priest, while traveling to Lima, met with a "sinister Italian." The priest let out a hint of great treasure, and was

later supposedly hypnotized by the Italian to get him tell the story!

"I will reveal to thee what no White man, be he Spaniard, or American, or English, knows," the dying Indian had said to the priest. He then told of the queen's closing of the tunnels when the Inca Atahualpa was being held captive by Pizarro. The priest added under hypnosis that the Peruvian government, in about 1830, had heard rumors of these tunnels and sent an expedition out to find and explore them. They were unsuccessful.[1, 22]

In another similar story, the Father Pedro del Sancho tells in his *Relación* that in the early period of the conquest of Peru, another dying Indian made a confession. Father del Sancho wrote:

> ... My informant was a subject of the Incan Emperor. He was held in high esteem by those in power at Cuzco. He had been a chieftain of his tribe and made a yearly pilgrimage to Cuzco to worship his idolistic gods. It was a custom of the Incas to conquer a tribe or nation and take their idols to Cuzco. Those who wished to worship their ancient idols were forced to travel to the Incan capital. They brought gifts to their heathen idols. They were also expected to pay homage to the Incan emperor during these journeys. These treasures were placed in ancient tunnels that were in the land when the Incas arrived. Also placed in these subterranean repositories were artifacts and statues deemed sacred to the Incas. When the hoard had been placed in the tunnels, there was a ceremony conducted by the high priest. Following these rites, the entrance to the tunnels was sealed in such a manner that one could walk within a few feet and never be aware of the entrance.
>
> ...My informant said that the entrance lay in his land, the territory which he ruled. It was under his direction and by his subjects that the openings were sealed. All who were in attendance were sworn to silence under the penalty of death. Although I requested more information on the exact location of the entrance, my informant refused to divulge more than what has been written down here.[1, 22]

Garcilaso de la Vega said that the tunnels beneath Sacsayhuaman were not just simple tunnels carved into dirt or solid rock:

> An underground network of passages, which was as vast as the towers themselves, connected them with one another. This was composed of a quantity of streets and alleyways which ran in every direction, and so

> many doors, all of them identical, that the most experienced men dared not venture into this labyrinth without a guide, consisting of a long thread tied to the first door, which unwound as they advanced. I often went up to the fortress with boys of my own age, when I was a child, and we did not dare to go farther that the sunlight itself, we were so afraid of getting lost, after all that the Indians had told us on the subject... the roofs of these underground passages were composed of large flat stones resting on rafters jutting out from the walls.[59]

Another famous story of the tunnels retold by Wilkins is about Carlos Inca, a descendant of an Inca emperor, who had married a Spanish lady, Dona Maria Esquivel. His wife thought that he was not ambitious enough, and that he did not keep her in the style she deemed befitting her rank, or his royal descent.

Poor Carlos was plagued night and day by his wife's nagging, until late one night, he blindfolded her, and led her out into the patio of the hacienda. Under the cold light of the stars, when all around were asleep, and no unseen eye was on the watch, he began to lead her by the shoulders. Although he was exposing himself to death at the hands of the Quechuas, torture, and other risks, he twirled her around three times. Then, assuming her disorientated, he led her down some steps into a concealed vault in or under Sacsayhuaman. When he removed her blinds, her tongue was finally silenced. She stood on the dusty, stone floor of an ancient vault, cluttered with gold and silver ingots, exquisite jewelry, and temple ornaments. Around the walls, clad in fine gold, were life-size statues of long dead Inca kings. Only the golden Disc of the Sun, which the old Incas treasured most, was missing.

Carlos Inca was supposedly one of the custodians of the secret hiding place of Inca treasure that eluded the Spanish and other treasure seekers for centuries. The US Commissioner to Peru in 1870 commented on this episode, "All I can say is if that secret chamber which she had entered has not been found and despoiled, it has not been for want of digging... Three-hundred years have not sufficed to eradicate the notion that enormous treasures are concealed within the fortress of Cuzco. Nor have three-hundred years of excavation, more or less constant, entirely discouraged the searchers for tapadas, or treasure mounds."[1, 22]

Sacsayhuaman was also equipped with a subterranean network of aqueducts. Water was brought down from the mountains into a valley, then had to ascend a hill before reaching Sacsayhuaman. This indicates that the engineers who built the intricate system knew that water rises to its own level. Are some of the tunnels of the *Chinkana* part of some hydrological plan to bring large amounts of

water to Sacsayhuaman? If this is the case then there is some similarity between Sacsayhuaman and Tiwanaku-Puma Punku, as we know that water-filled canals and tunnels were part of that complex which even included an artificial lake on top of a pyramid. Water may have been used to wash ores at Tiwanaku, so was there some similar use of water at Sacsayhuaman?

Why were there such labyrinthine tunnels beneath Cuzco and Sacsayhuaman anyway? Were they possibly the result of extensive mining? Perhaps Cuzco started out as a mining camp and processing area, like Chavin and Tiwanaku, and then became a temple and capital city. The capitals of many states and countries around the world are the most important mining cities of their area.

The Vitrified Stone Walls of Cuzco

At the western area of Sacsayhuaman we found some underground tunnels, some of which were cut through solid rock, and with our flashlights in hand, explored them for a short distance. Were they part of the *Chinkana* tunnels, or part of an aqueduct system? It was hard to tell. There are several massive boulders in this area that are cut in a strange fashion, including upside down staircases and other oddities. At one of these we were told by a local guide that this was indeed the area where a large entrance had previously existed into the tunnel system, but it had been blocked up with stones and dirt.

Our minibus was waiting for us near the paved road going past Sacsayhuaman and, after getting in, we drove the half mile or so to the incredible and mysterious ruins of Qenko. At Qenko (or Kenko), large rocks, cliffs, and hills are all carved with a most bizarre menagerie of steps, tunnels, seats, niches, windows and other shapes. One begins to imagine an architect doodling with modeling clay, but on an enormous scale. Staircases at odd angles lead nowhere. Other paths, tunnels and staircases are so weather-worn, they give the impression of being many thousands of years old. As we walked around, we even found what looked like an ancient set of parallel cogs cut into the stone, as if it were were part of some set of gears or a levering device.

This is one of the strangest ruins I have ever seen. You will not find much about Qenko in most archaeology books or tourist guides, simply because it cannot be explained ! Qenko’s appearance gives the impression of construction that was toppled and destroyed in a great South American earthquake of ages past. Or, another explanation would be that the stonecutters decided to “practice” and played with these gigantic boulders and rock caves that are sliced and cut as if by some laser or power tool. Modern archeologists try to tell us that the Incas were bashing out these puzzling, nonsensical carved boulders at the same time

that they were building the amazing walls of Sacsayhuaman and Cuzco—but why? It would seem to be the work of someone who could make very easy cuts into the stone instead of the fruit of some laborious process with stone hammers that archeologists assure us it is.

One of the strange carved stones near the tunnels at Sacsayhuaman.

Back in Cuzco, we went out for dinner at a restaurant on the main plaza and discussed the giant stones and strange tunnels of Cuzco and Sacsayhuaman. Chris Dunn thinks that the ancient Egyptians used power tools, and he said that may well be the case here as well. But it seems clear that the Incas did not have power tools. Only some earlier culture, nearly as advanced as we are today

(probably more advanced, in fact) could have made these seemingly effortless walls. Was some even higher technology than power tools being used? Perhaps a method of melting stone, or of pouring liquid stone in a similar manner to mixing and pouring concrete today?

One theory concerning the building of the gigantic and perfectly fitted stones is that they were constructed by using a now-lost technique of softening and shaping the rock. Hiram Bingham, the discoverer of Machu Picchu, wrote in his book *Across South America* of a plant he had heard of whose juices softened rock so that it could be worked into tightly fitted masonry. In his book *Exploration Fawcett,*[65] Colonel Fawcett told of how he had heard that the stones were fitted together by means of a liquid that softened stone to the consistency of clay. Brian Fawcett, who edited his father's book, tells the following story in the footnotes. A friend of his, who worked at a mining camp at 14,000 feet at Cerro di Pasco in Central Peru, discovered ajar in an Incan or pre-Incan grave. He opened the jar, thinking it was chicha, an alcoholic drink, breaking the still intact ancient wax seal. Later, the jar was accidentally knocked over onto a rock.

Quotes Fawcett, "About ten minutes later I bent over the rock and casually examined the pool of spilled liquid. It was no longer liquid; the whole patch where it had been, and the rock under it, were as soft as wet cement! It was as though the stone had melted, like wax under the influence of heat."[65]

Another story is told in South America of a biologist observing an unfamiliar bird in the Amazon. He watched it starting a nest on a rock face by rubbing the rock with a twig. The sap of the twig dissolved the rock, making a hollow in which the bird could build its nest.

In an article published in *Nexus New Times* (Vol. 19, No. 5) entitled "Vitrified Stonework of the Ancient World" it is claimed that the granite walls in Cuzco show evidence of being heated to a very high degree and vitrified—the outside surface becoming glassy and very smooth. The authors, Jan Peter de Jong and Christopher Jordan with Jesus Gamarra, claim that some sort of high tech device was used to melt stone blocks which were then placed and allowed to cool next to hard, jigsaw-polygonal blocks that were already in place. The new stone would remain fixed against these stones in near perfect precision—but would be its own separate block of granite that would then have more blocks fitted into place around it and "melted" into their interlocking positions in the wall. In this theory, there would still be power saws and drills that would cut and shape the blocks as the walls were assembled.

The authors maintain that this high tech melting of stone was going on around the world, and that the stones on some of the ancient streets in Cuzco

have been vitrified by some high temperature to give them their characteristic glassy texture. Jordon, de Jong and Gamarra say that temperatures need to reach 1,100 degrees centigrade and that numerous archeological sites around Cuzco, including Sacsayhuaman and Qenko, showed signs of vitrification.

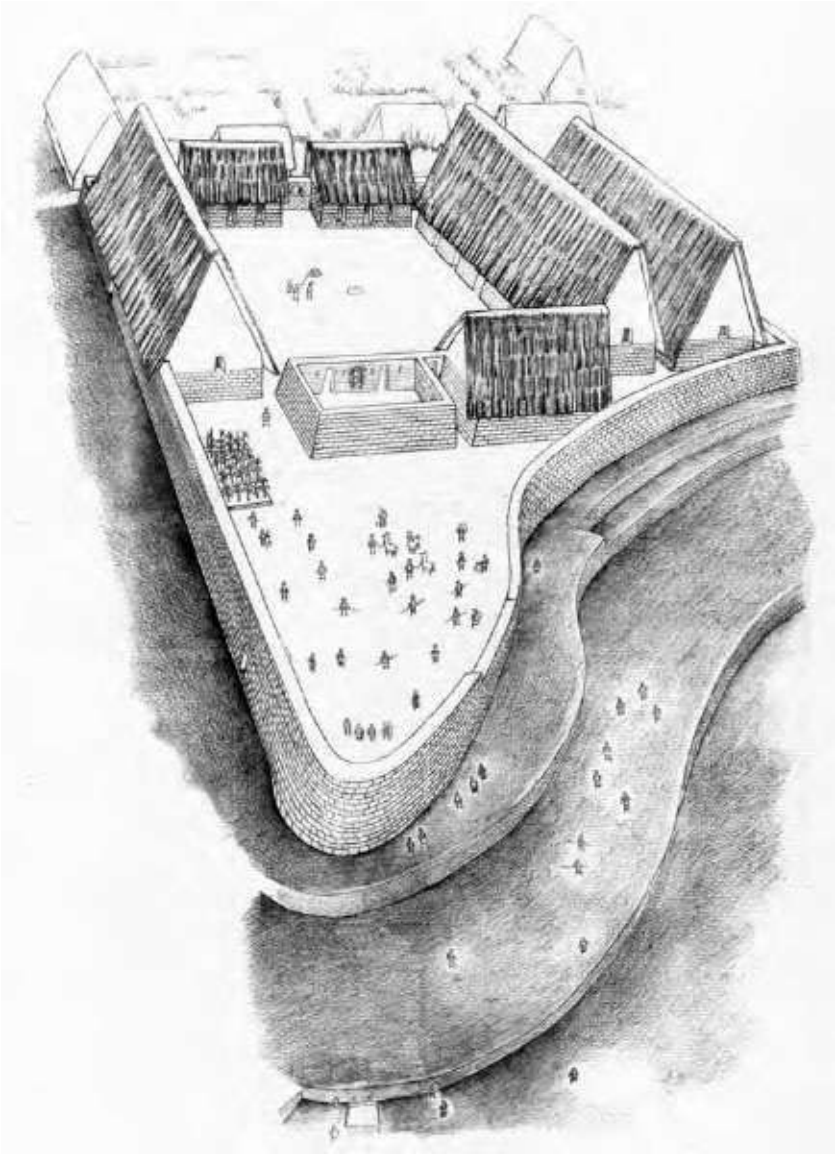
They made these points: the melted effect is obvious; the vitrified layer refracts, diffracts and diffuses light; damaged layers show a “film” on the stone; the glazed surface is independent of rock type; the surface is smooth to the touch, even if the surface is irregular; there is often associated heat discoloration around the glaze.

The trio claim that a simple flashlight test was developed which helped them to identify different layers in the glaze or “glass” on the surface of the base stone, whether it was limestone or granite. They identify the Inca throne at Sacsayhuaman as a spot where the rainbow effect of the refraction of the glaze can be seen at night, using flashlights. They made a documentary called *The Cosmogony of the Three Worlds,* and a portion of this concerning the vitrification and their studies can be seen on YouTube. The *Nexus New Times* article also said that a small sample from a Peruvian site called Tetecaca was collected and then analyzed by researchers from Utrecht University in the Netherlands.

According to the article, which includes photos, the main body of the stone showed the spectral composition for limestone, as is common at Sacsayhuaman and other areas. However, the vitrified surface of the stone showed a very different spectrum of elements compared with the normal body of the limestone. The big difference was that the vitrified section of the stone had a much higher concentration of silicon and trace elements of aluminum and magnesium than the body of the sample. The researchers concluded that oxygen may have been added during the heating process and the forming of a vitrified silicate glaze on the stone.

This was all pretty interesting stuff, and as the evening wore on at the restaurant on the plaza, we all admitted that the stonework in Cuzco was amazing and precise. The melting of stone is certainly a high tech process, one wouldthink, though some earlier archeologists, like Ivan Watkins (mentioned in the *Nexus New Times* article), had noticed vitrification on some of the walls in Cuzco and proposed that a parabolic disk of gold—a sun disk—could focus the rays of the sun and melt stone like a primitive laser. Modern archeologists easily rejected his explanation, but the mystery remains: are stone walls around Cuzco vitrified by some intense heat created by some high tech device? Only further research will answer this question.

As we walked down the megalithic street known as Loreto from the main plaza back to our hotel, I thought of the exciting scene from the *Star Wars* film *Revenge of the Sith* where the Jedi Masters use their light sabers to melt the vault door inside a spaceship in order to escape from the room they were trapped in. In that scene, the Jedi thrust their light sabers into the thick metalic door and begin melting the area around the lock. Was some sort of high-powered, rock-melting device like that used on the stones of Cuzco? The stones, as usual, were silent as we passed.



Plan of the Qoricancha by Fernando Bolivar, 2008.

The strangely articulated doorway, protected by plexiglass, at the Qoricancha

Two close-up photos of the drill holes in the articulated doorway at the Qoricancha.

Backside of the articulated doorway, protected by plexiglass, at the Qoricancha

CHAPTER SEVEN

THE MEGALITHS OF OLLANTAYTAMBO

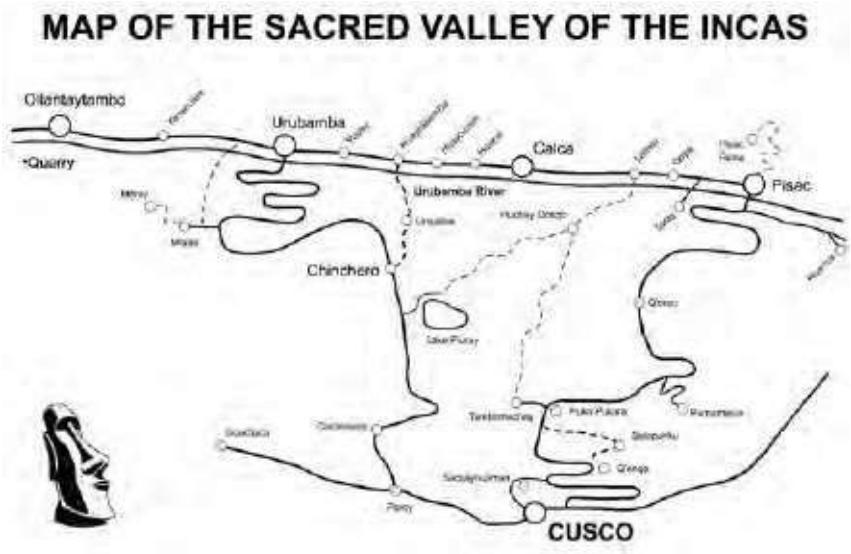
"The Place of Dead Roads, *señor*.
This does not mean roads that are no longer used,
roads that are overgrown,
it means roads that are *dead*.
You comprehend the difference?"
—William Burroughs, *The Place of Dead Roads*

When I first arrived in Ollantaytambo, nearly 30 years ago, it was a sleepy hamlet with a couple of small hostels in the old town of winding streets, courtyards and walls with cactus on top, grown there as a deterrent to thieves. I was amazed by the gigantic stones of the "Sun Temple" at the top of the steep stairs of the ruins, and my wonder at the megaliths around Cuzco began a lifelong quest to understand how and why these gigantic blocks had been put into place. This time, I was coming into town with Jennifer and a filmmaker from Chicago named Steve Zagata who had met us in Cuzco to help make a documentary on ancient technology in Peru.

We took a tourist taxi from Cuzco, crossed the Urubamba River to the east bank—after passing the ancient Inca salt mine—and then drove into Ollantaytambo, which lies at the north end of the lush agricultural area known as the Sacred Valley. This area, lower than Cuzco with plenty of water, can grow crops from the jungle and crops from the mountain highlands as well. Our taxi dropped us off at the main square in town, one surrounded by restaurants and

shops. We found a small hotel and then wasted no time in getting up to the great Sun Temple, located on a ridge within the walls of the ruins above the city.

Ollantaytambo is one of four still living towns from Inca times. The other towns are Cuzco, Chinchero and the small town of Choquechancha in the mountains above Ollantaytambo and Yungay. Each of the towns still has buildings, some with megalithic walls, that have been lived in since the time of the Incas and Spanish conquest (and probably long before). Ollantaytambo is particularly pleasant to wander through, with impressive stone walls and small streams running down the stone gutters of the main streets. One can get a good feel of how the town was in Inca times and little has changed since… although the recent tourist boom has certainly made an impact; the town's economy has boomed, as well as real estate prices. Ollantaytambo is 45 miles north of Cuzco on the banks of the Urubamba River. This river is known as the Vilcanota River near Puno where it begins to flow north towards Cuzco; it becomes the Wilcamayu ("Sacred River" in Quechua) for a portion of its journey and is finally called the Urubamba River ("Place of Grubs") as it flows through the Sacred Valley. Thus the Urubamba River and the Vilcanota River are the same, which often confuses travelers.



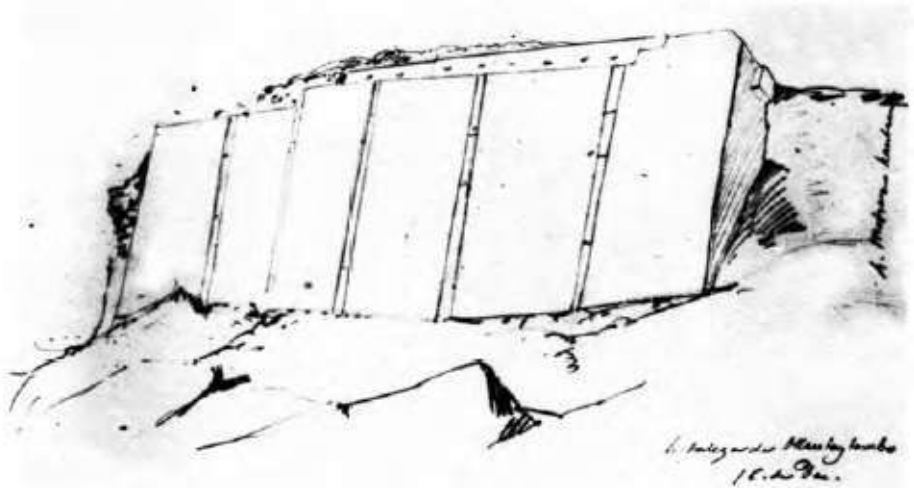
I thing that the builders of Tiwanaku and Puma Punku would have naturally come down from the Altiplano and Lake Titicaca following the Vilcanota River which, in a few days of walking, would lead them to Cuzco and then in another day to the Sacred Valley and such places as Pisac, Yungay and Ollantaytambo. Beyond this the Urubamba enters a narrow gorge but eventually widens out around Quillabamba, the last station on the train line from Cuzco that goes past Aguas Calientes and Machu Picchu. The Urubamba goes through more jungle

river gorges after Quillabamba and then plunges, eventually merging with the Apurimac River and then the Amazon. The lower Urubamba was only mapped in 1934 when 18-year-olds from Palo Alto, California (Silicon Valley today) decided to create their own expedition and navigate the rapids with canoes and balsa rafts. They eventually made it to Iquitos and gave their map to the Peruvian military.

The ruins at Ollantaytambo are at the north end of the town, strategically built on a steep mountain ridge that overlooks the Urubamba. I believe it is at Ollantaytambo that definitive evidence can be found that proves that the Incas did not build Machu Picchu or any of the other megalithic walls. Rather, evidence will show that, like Tiwanaku in Bolivia, these structures were already extant when the Incas arrived.

The Sun Temple at the Top of the Stairs

Access to the ruins has been cut off by a walled area where one has to show a ticket to enter; happily, the Cuzco Tourist Ticket includes Ollantaytambo. Outside the walls, a daily market springs up where local women sell colorful trinkets and small children dressed in traditional Quechua attire pose with llamas, hoping tourists will snap a photo and give them a tip. Inside the walls, the ruins spread out over the mountainside. Directly in front of the entrance, a series of wide terraces built of rounded stones ascends the hill. Above these terraces are the ruins of what seem to have been the living quarters of the old village; a series of rooms with alcoves and niches, windows and doorways, provide a fun labyrinth to wander through. To the right of the entrance are the ruins of what appears to have been a ceremonial center where a stream provided water that was channeled through various structures; is has been posited that this was a healing center. The Bano de la Nusta (“Princess’ Bath”) located here is a small waterfall that comes out of the hillside and splashes into a square rock basin framed by stonework cut in a stepped pattern. Above these baths, a couple of tall, thin buildings with thatched roofs picturesquely cling to the hillside. These are variously said to have been granaries, storerooms or military prisons, and probably served many purposes over the years. These buildings can be accessed via a trail going up from the baths, or from a more exciting trail that hugs the mountainside, curving off from one of the higher terraces of the wide, central group.



The Wall of Six Megaliths at the Fortress of Ollantaytambo drawn in 1843.

To the left of the entrance is the part of the ruins that is most fascinating, containing the beautiful megalithic stonework of old. The narrow terraces that climb the steep cliff here, faced with giant, perfectly fitted jigsaw stones, are even called the “Fancy Terraces.” A stone staircase to the left of the wide central terraces is the starting point for gaining access to the megaliths.

After showing our Tourist Tickets at the gate, Steve, Jennifer and I began the long ascent. Huffing and puffing up the stairs (I usually step out onto one of the terraces about halfway up to catch my breath) we finally made it to where the first megaliths were situated. Here there is a short granite stairway leading up to the left, which gives way to a long pathway that follows a wall of finely fitted granite blocks in the polygonal-jigsaw pattern. There are some window-like niches carved into this wall, and a curiously placed door, which is backed by the dirt and gravel of the mountainside. I have always wondered if this door once led to some rooms or secret tunnels burrowed into the mountain. The stones here have patches of orange lichen growing on them, attesting to their antiquity and the fact that they hadn’t been used, cleaned or polished for hundreds of years. At the end of this wall, the path goes through a wonderfully preserved megalithic door, with its huge lintel still in place.

After passing through the door, we suddenly found ourselves on the edge of a cliff overlooking the Ollantaytambo River (which flows through town on its way to the Urubamba) and the market plaza below. We turned sharply right, and hiked up a rocky trail on the ridge of the cliff and finally reached the open area where the famous, finely dressed sheets of rock that form the “Sun Temple” stand. This may be the piece de resistance of all the megaliths in all the world for the stunning impact it provides—here on this small promontory, surrounded by

plunging cliff walls, stand gargantuan, beautifully finished stones carved by man and dropped in this improbable place.

A portion of the Wall of Six Megaliths at the Fortress of Ollantaytambo.

Also on the promontory are some large blocks of stone that appear to be randomly placed, as though they were just tossed around. There are a lot more of these in the part of the ruins behind and slightly below the Sun Temple. Here, some gigantic blocks form part of a wall, but other stones lie at odd angles. Indeed, much of the upper part of the ruins appears to have been destroyed in some massive cataclysm, perhaps an earthquake. Many archeologists believe, however, that the randomly strewn stones were brought to the site and simply never put into place. Some of these blocks have keystone cuts incised into them, like those found at Tiwanaku, Puma Punku and the Qoricancha in Cuzco. We will examine these keystone cuts later in this chapter.

Evidence of Pre-Inca Construction at Ollantaytambo

The most impressive megaliths at Ollantaytambo are clearly the six large stones that comprise the Sun Temple. The largest is about 13 feet (4 meters) high, 7 feet (2.1 meters) wide, and about 6 feet (1.8 meters) thick, and weighs approximately 50 tons (45,500 kg). The other stones are of a similar size. Made from red porphyry, a very hard type of rock, much of their surfaces are very finely polished. On the fourth giant stone from the left is a stepped motif, like

that seen at the Bano de Nusta. This is identical to decorative elements at Tiwanaku in Bolivia, but not generally found elsewhere in the Cuzco area. Even more unusual are the keystone cuts that are also associated with Tiwanaku.

The red porphyry of which the rocks are made is a type of igneous granite embedded with large-grained crystals called phenocrysts. The term “porphyry” comes from the Greek word for “purple”—a color associated with royalty—and porphyry is often of a purple or red hue. Did the large-grained quartz crystals in the gigantic blocks found at Ollantaytambo somehow help in the moving of the stones? Knowing of the power that can be transferred into a quartz crystal (see my book *The Crystal Skulls)*, it would seem that a stone like porphyry might be useful in some sort of anti-gravity test. More on that in a little bit.

The giant stones were all quarried across the river from Ollantaytambo, just below a huge cliff about 3,000 feet up the opposite slope at a place called *Kachiqhata.* At this quarry near the mountaintop can be found gigantic blocks of granite that have been cut and squared, but were never moved from the site.

The Incas used Ollantaytambo as a fortress to guard the entrance to Cuzco from up the Urubamba River. After the Spanish invasion, when Manco Inca had retreated from Cuzco to the jungle beyond Ollantaytambo, the Incas used the fortress to try to stop the Spanish from advancing from Cuzco and reaching their stronghold at Vilcabamba. An important battle took place at the site when Pedro Pizarro’s cavalry executed a surprise attack at dawn, expecting to find Manco Inca and his men sleeping. It was they who were surprised, however, when their stealthy advance was met with a rain of arrows from the heights of the fortress. Although the Incas used the formidable construction at Ollantaytambo, it appears that the structures, like those at Sacsayhuamn, were already in place when they arrived in the Sacred Valley.

Close up of the thin sheets of rock at the Wall of Six Megaliths at Ollantaytambo.

In an article entitled *The Impossible Stones* that appeared in the May 2002 issue of the British magazine *Fortean Times,* author Allan Alford discusses the amazing construction of the Sun Temple. He points out that red porphyry is a hard igneous rock, and wonders how the 13-foot blocks were carved with such perfect flat surfaces and die-straight edges. He questions how the 50-ton blocks were moved four miles from the quarry across the river and then raised to their present position. He notes that in 1996, a group of archeologists tried to demonstrate how it was done with a one-ton block. This relatively puny stone slipped its ropes on the way downhill from the quarry, and gravity took it down to the river. The archeologists then managed to drag it across a shallow part of the cobble-bottomed river. But there they left it, declaring they had now proved

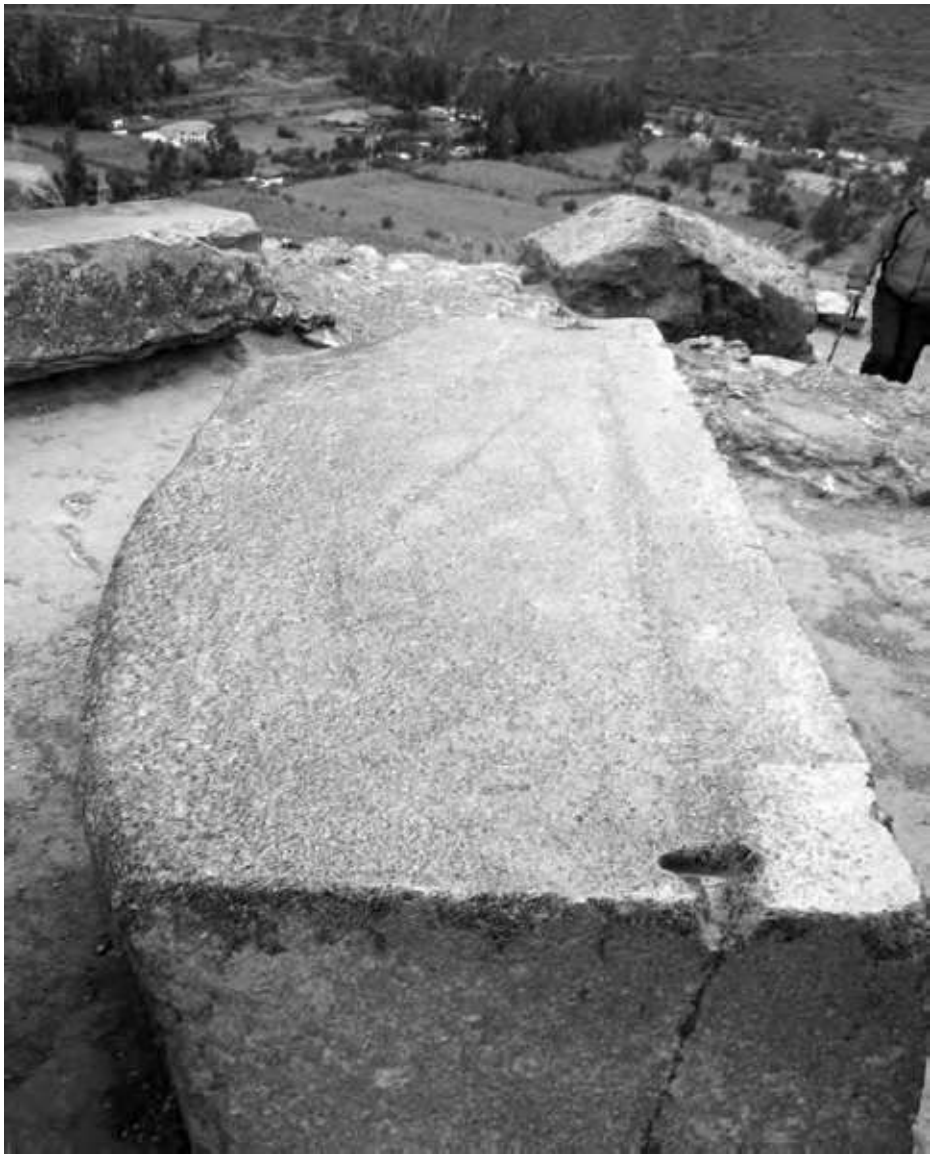
how the massive wall high above could have been made! Their rough, unfinished “pebble” is probably still on the riverbank.

Alford goes on to mention the unique and very un-Inca-like thin sheets of rock separating the six blocks in the wall. These sheets, which also must have been challenging to the stonemasons, serve no discernible practical purpose.

William Corliss of the Sourcebook Project in Maryland, who published a critique of Alford’s article, added to the discussion of the blocks. He pointed out that one of the porphyry blocks has a T-shaped slot cut into its top for insertion of a metal clamp just like the keystone cuts seen at pre-Inca Tiwanaku. He also points out that whoever built it seems to have left the wall unfinished, seeing as there is no block cut to receive the other end of the metal clamp.

He says that part of the answer to this dilemma may lie in the river far below the wall, where a 250-ton block resides waiting to be raised-up to the wall—another sign that the wall was never finished.

So what we find at Ollantaytambo is curious and baffling, but most indicators point to a pre-Incan culture as having been the original builders. It appears that the complex was never completed. If the Incas were building at the site within a hundred years of the arrival of the Spanish, why would they have just walked away, leaving stones strewn about the area? If the aura of disarray at the site stems from a cataclysm wreaking havoc, why wouldn’t the Incas have rebuilt? One suspects that the catastrophe predated the Incas, and that they could not actually handle the stones to put them in some better order when they happened upon the site. The keystone cuts give a large hint that the original builders of Ollantaytambo were the same people who built Tiwanaku.



A close-up of one of the gigantic blocks with a keystone cut at each end.

Interestingly, one keystone cut makes it clear that there was more than one building phase at the site. This cut can be seen in a massive red granite block that has been placed in a wall on a narrow ledge to the left of, and slightly below, the Sun Temple. This is an area not visited by many tourists, as the main route followed by tour groups takes them off the promontory to the right of the Sun Temple, back toward the other ruins. To the left side of the Sun Temple, the cliff face is fairly sheer, but there are a few terraces, and they must have been in use at some point, because someone built the wall using the large red granite block.

A portion of the wall at Ollantaytambo with a keystone cut in a vertical position.

The evidence that it was not the original builders who placed this rock is that the keystone cut appears on its vertical face, the face that forms the front of the wall! As we have pointed out over and over, the keystone cuts are to be made on the tops of stones in mirror images, so that the stones can be fitted together and molten metal can be poured into the grooves that will then solidify and strengthen the bond between the stones. Clearly, a vertical keystone cut is not going to hold liquid metal, not to mention that this stone is not placed next to a stone with a corresponding cut. Obviously, this stone was taken from some other part of the complex and inserted in this wall.

The observable keystone cuts at Tiwanaku and Puma Punku all seem to be in their correct locations, on top of stones that are next to stones with corresponding cuts. Most of the clamps are missing, however, a few have been excavated in situ, still holding their blocks together. These have all been found under deep layers of soil, presumably buried there at the time of the cataclysm that seems to have destroyed these sites with a wave of mud and muck.

A close-up of the curious block with a keystone cut in a verical position.

What appears to be happening at Ollantaytambo is that at least two different phases of construction have occurred, maybe three or four phases. The first phase of the building, the most impressive, dates back to the pre-Inca time of the building of Tiwanaku (whenever that was!). It features the gigantic blocks of granite that are so finely fitted in the Fancy Terraces, and includes the great wall of the Sun Temple with its narrow slivers of granite between the gargantuan blocks. The other large blocks such as those with keystone cuts would also have been from this first phase. The second phase would have happened after the original builders had stopped. They evidently just stopped construction right in the middle of the process; perhaps a cataclysmic event interrupted not only the construction, but their entire civilization.

This second phase would have involved the reuse of some of the blocks that could be moved without the engineering “magic” of the earlier builders. Certain large blocks could be levered into place in a new location, though other bigger blocks would have to be left where they lay since they were just too large and heavy to move. This would be why the fairly large granite block on the west side of the Sun Temple (with a keystone cut in it) is now in a different place than was clearly originally intended. It is a heavy rectangular block, but it is not as heavy as some of the other gargantuan blocks seen, for example, directly in front of the

Sun Temple wall. These blocks weigh over 100 tons apiece and would be difficult to move, even for a modern construction company.

A third phase of building also seems to have occurred. I think it would have been during this phase that the central terraces were built (or restored) using the small rounded stones seen there. The buildings of the old village above these terraces were probably restored at this time, and the “granary” buildings were added on the eastern slope above the baths. The Incas probably did construct these features of small stones and adobe mud walls, and some of it was probably done shortly before the arrival of the Spanish. It is generally true in Peru, as it is around the world, that the more grandiose and perfect the stonework, the older it is. The more recent work is always the smaller, rougher stonework, often with mud cement between the rocks.

Tour guides (and archeologists) in Peru often get this wrong, and think that the larger stones are the more recent buildings. One good example of this is the central “megalithic” part of the city of Pisac at the other end of the Sacred Valley from Ollantaytambo.

The central part of Pisac contains a number of very well-made houses (without roofs) formed from trapezoidal granite blocks that are perfectly fitted together. None of the stones are colossal in size, as are some of the stones at Ollantaytambo, but they are of the type of regular, perfect fitting that is known as the “Royal Inca” style. Many of the building in the central part of old Cuzco are made in this fashion.

Also among these small buildings is another square building, about the same size, but it is built out of small rocks that have not been cut. Mud and other small rocks were used to bind the walls. It is clearly of an inferior building technique and seems out of place among the other buildings. So, which is the earlier construction? I would say that this poorly constructed house was the later building, probably made by the Incas, and all the other structures are much earlier.

Massive blocks in the megalithic section of Ollantaytambo have been used in later construction using crude stones as fill.

But tour guides basically say the opposite when at the site. They claim that the poorly constructed house at Pisac is the oldest of the buildings, presumably made before people knew how to build things properly. But it is obviously the newest of the buildings; this rather poorly constructed room was something quickly made as a storeroom or something. If it had been there before the so-called Royal Inca construction was done, it would have been torn down so as not to ruin the Royal Inca stonework going up around it. The stonemasons who were making these impressive and precise walls—whoever they were—were all about the quality and look of the stone, and the excellence and elegance of the fitting—even with gigantically huge blocks. And that is the essence of the great mystery in Peru and Bolivia.

The smaller but finely fitted so-called “Royal Inca” construction, seen here at Pisac.

A Journey to the Megalithic Quarry at Ollantaytambo

In order to get a better understanding of the stones and methods used in building Ollantaytambo, we knew we needed to take a trip to the megalithic quarry high on the mountainside across the Urubamba River. Years ago in the early 1990s, I had walked up to the *Kachiqhata* quarry with a local Quechua-speaking guide named David Espejo who came from Cuzco. We left early one morning from one of only two small hotels that existed in Ollantaytambo at the time, and crossed the Urubamba River over the ancient megalithic bridge at the south end of town. Hiking up to the quarry took most of the morning. It is a long and difficult hike and not one that most tourists are ready to take, even if they stay in Ollantaytambo for a few days.

On that trip many years ago, we went to the southern side of the quarry, where some of the huge large rectangular blocks of red porphyry still sat on the “roads” or “ramps” that were built to move them. I was amazed at the size of the blocks and it seemed like some superhuman effort would have to have been used to move them. Unfortunately, on that trip I wasn’t able to hike up higher into the quarry to the northern section. I knew I wanted to go back.

Back at the main plaza with Steve and Jennifer, I found a horse rental company and asked the owner about a trip up to the quarry with a guide. He was

able to arrange that, he said, and we made a deal to leave the next morning. Early the next day we met the horsemen at the old bridge where Steve, Jennifer and I would each be riding up the ancient trail to the quarry, accompanied by a guide who was to control the horses as best as he could.

As it turned out, he could not control the horses very well. It seemed the horses knew the rigors of this route, and were not too happy to be our pack animals. Nevertheless, nudging and prodding, we made our way.

The trail starts out following the west bank of the Urubamba River. At one point, the train to Machu Picchu went by on the tracks on the other bank, and we waved to the excited tourists on their way to that grand ruin. Soon we had climbed high above the river, and had come to a place where it was necessary to traverse several rocky ridges that came to sharp corners along the trail. Often at these corners, we were on the ledges of small cliffs descending abruptly from the trail 20 feet or more. There were also often spiky cacti growing at these spots, and we could almost sympathize when the horses came to a complete halt and refused to be prodded on. We dismounted and walked for a while.

The view as one approaches the Ollantaytambo quarry of *Kachiqhata.*

After rounding the final bend of this steep zigzagging section, the trail turns into a gently sloping path around a wide face of the mountain. Our horses were slightly happier on this stretch, and we ambled on for a while before encountering two of the so-called “lazy stones” that were long rectangular

blocks of red porphyry that had been cut and dressed at the quarry and then moved toward the fortress of Ollantaytambo, but for some reason never made it to the building site. There are a lot of these stones, and they come in various sizes; they were not abandoned just because of weight or size—bigger stones were taken all the way to the site. They add to the mystery of what went on at Ollantaytambo—why could they make it partway, but not all the way? We will discuss the possibilities on that front later in the chapter.

We continued on the trail, going gradually uphill toward a large slope filled with small rocky scree. Here, ramps had been built into the slope. A few large squared blocks of red porphyry granite could be seen dotting the landscape—gigantic blocks of stone that weighed from 50 to 100 tons. As we approached them on horseback, we came to a pleasant spring on the hillside with clean water coming out of the rock and forming a pool in a small grassy field. We dismounted and allowed the horses to drink and graze on the grass for half an hour. We remounted, but it was not long after we passed the scree that the trail began to zigzag steeply up the shoulder of the mountain, and the guide announced that the horses could not go any farther. We would have to walk the rest of the way.

We dismounted and left the horses to graze on some grass with the horseman watching them. Huffing and puffing due to the steep climb and the high altitude, we plugged along up the switchbacks. After another half an hour or so, the ground started to level off and large blocks of red porphyry granite could be seen scattered over a wide area. Farther up the hill were the sheer cliffs and even more large boulders of the red stone. This was the quarry of *Kachiqhata* and it is here that the builders of the fortress of Ollantaytambo found their very large stones.

Still out of breath, we sat down on some rocks and got our water bottles out for a drink. We had a great view of the Urubamba River far below, and the fortress of Ollantaytambo on the other side looked smaller than a dollhouse. It seemed incredible that these gigantic blocks of stone were to be hauled down the mountain, across the river and up the other side to the steep ridge where the Sun Temple stood. The effort involved would appear to be superhuman, particularly if it involved people dragging giant stones along the ground.

From this angle and height, looking southward toward the town of Ollantaytambo, one can see the fields of potatoes, corn and quinua that are grown below the town at the foot of the western cliff of the ruins. These fields have a very interesting feature: when looked at in the right way from the right height, an optical illusion makes the fields stand up in a 3D pyramid! I discount

a lot of “simulacra” phenomena, but this is the real deal—and it hardly seems like the layout of the fields could have been an accident. The locals call this strange visual pyramid the Pyramid of Pacaritanpu, and it is associated with guardian spirits of the valley.[66] Photos of this “pyramid in the fields” appear on the covers of some books sold in Ollantaytambo and Cuzco, and it would seem to have some purposeful design. Yet it could not be seen by the inhabitants of the town themselves, unless they crossed the Urubamba and climbed the mountain on the other side. Who was it for then? Was it some kind of marker identifying Ollantaytambo and the Sacred Valley to any airship or sky gods that might be flying by? It reminds me of the Nazca lines, which also seem to be signaling to the heavens.

The fascinating “pyramid in the fields” constructed in the valley at Ollantaytambo.

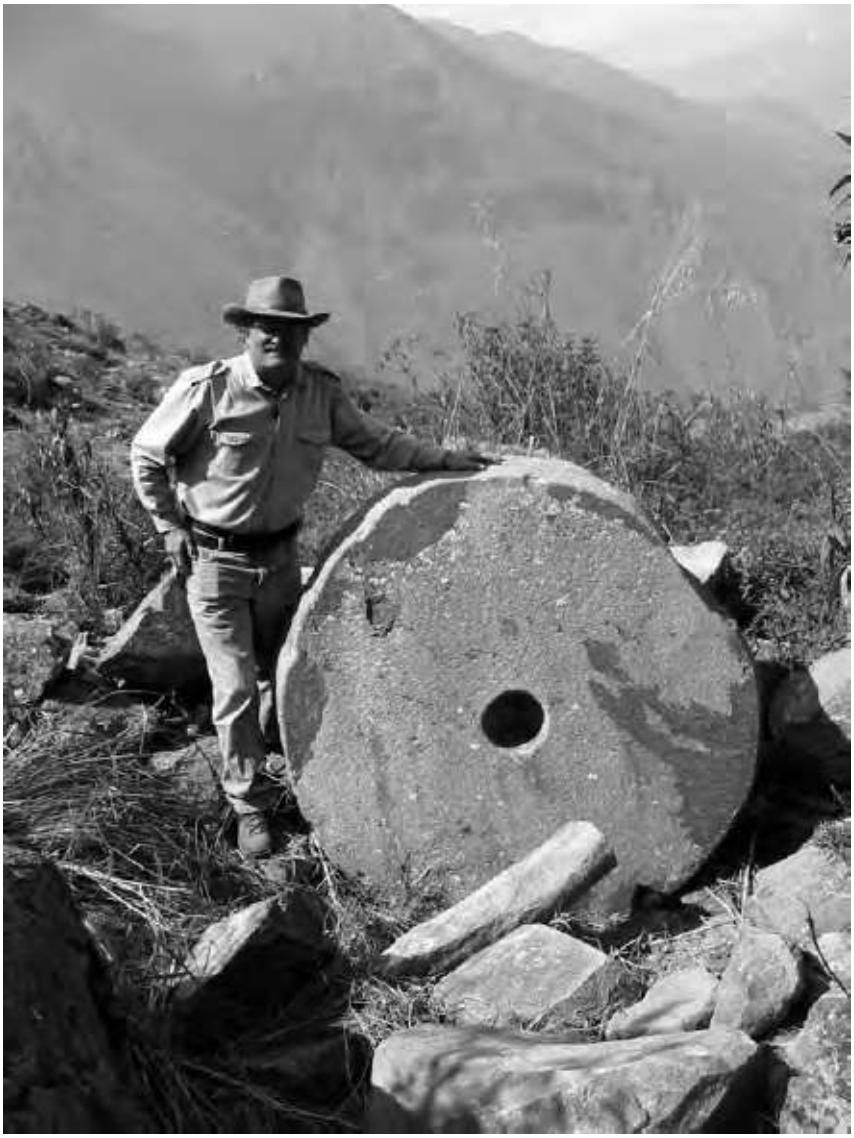
Once we had caught our breath, we began walking around the area, looking at some of the large squared stones. One seemed to have a saw cut at one end where some large blade was beginning to slice the end off the large rectangular block like one might cut the end off of a loaf of bread. But the work was mysteriously stopped; the end was not sliced off and the block was left in place at the quarry. What had stopped the work so suddenly?

Mainstream archeologists tell us that this quarry was in use just before the arrival of the Spanish, and that the building of Ollantaytambo was going on only

a few decades before the conquest. What had stopped the building and moving of the blocks—the Inca civil war or the arrival of the Spanish? When looking at the huge blocks left in the quarry and the large lichen spots on them, it seemed like the cutting and moving of the stones had stopped thousands of years ago.

A curious object at the quarry is a round stone wheel with a hole in the center of it. It appears to have been “sliced” from a fatter block by a saw, and is very smooth along its sides. It seems like the sort of stone wheel that Fred Flintstone would have had on his prehistoric car, and is certainly an oddball artifact at the quarry. The Incas were not supposed to have known about the technology of the wheel (which seems pretty odd considering the gigantic buildings they supposedly made), and so the stone wheel at the quarry would seem particularly out of place to any mainstream archeologist. Some, like the expert stonemason Jean-Pierre Protzen, have wondered if it was possibly made by the Spanish but never moved down the hill to the town. This explanation seems just as implausible as any, and how such a smooth, “sliced” wheel would have been made at the quarry in unknown. A huge electric saw would seem to be the only way to make such an object.

The huge squared block with saw marks at the quarry of *Kachiqhata.*



The author with the round stone with a hole in it at the Ollantaytambo quarry that appears “sliced.”

As to the megaliths of Ollantaytambo, some sort of explanation has to be put forward by the mainstream archeologists who maintain that the site is the work of Inca stonemasons using the most simple tools and methods to move and dress the stone. So, what is their explanation? Can we duplicate the process that is being posited by those who struggle to explain these amazing blocks of stone and the engineering feats used to move and stack them? To answer this, we need to look at the work of the aforementioned Swiss stonemason and university professor Jean-Pierre Protzen.

Jean-Pierre Protzen and the Mystery of the Stone

The mystery of the building of Ollantaytambo is one that has a profound impact on modern archeology. Not only is it a mind-boggling and impressive site, but allegedly it was built by a culture that was lacking much of the knowledge that cultures in Europe, Africa and Asia in the Old World had. Mainstream archeologists, if their theories which were now expounded in books and universities all over the world were correct, would have to be able to show that the Incas built Ollantaytambo by simple means only a few hundred years before the Spanish arrival. So, how was it done?

The answer, according to these mainstream voices, is by simple brute force. In the case of the cutting and articulating of the blocks in such a “perfect” and difficult fashion, it was by tedious, time-consuming beating with primitive stone hammers and soft metal chisels until the perfection was achieved. It was with “patience, patience, patience” and more and more brute force that a gigantic block was dragged and then lifted into place. The polishing and final cutting of the blocks was even more time-consuming and tedious detailed work on very hard stone. And so the Incas (or whoever) made these structures. Never mind the reason they would choose to do something so incredibly difficult by our standards.

Filmaker Steve Zagata standing on the huge squared block with saw marks.

Yes, even the conservative archeologists are impressed by the building of

Ollantaytambo, and so they must offer some reasonable explanation of how all this was done. The quarry for the stones is on a mountainside across the river and as we have noted, a trail of "lazy stones" can actually be followed down to the river and then to the western side of the sharp mountain ridge upon which the Sun Temple sits. The remains of a ramp up the west side of the ridge and other roads can be also be seen. Still, the stones had to be moved down a mountain, across a river and then up the steep slope of a ridge to a small plaza with steep drops on every side. Every tourist must ask himself how it was done… and the usual answer is not entirely satisfying.

As mentioned in the last chapter, Jean-Pierre Protzen is a Swiss architect/stonemason who teaches at the University of California at Berkeley. Because of his detailed investigation into megalith building in the Andes, he is the best source for any mainstream explanation for the building of Ollantaytambo, Sacsayhuaman, or other super-megalithic sites. Protzen generally tackles the problems from a practical point of view, and he says he goes along with mainstream archeologists who claim that the Inca are the builders of Cuzco, Sacsayhuaman, Pisac, Ollantaytambo and Machu Picchu—but that an earlier Tiwanaku culture built the massive ruins of Tiwanaku and Puma Punku, as well as perhaps the towers at Cutimbo and Sillustani. However, he admits that some things remain a mystery to him and he is baffled by the keystone cuts found at Ollantaytambo and the Qoricancha, which he knows were used at Tiwanaku and Puma Punku.

As we noted in the previous chapter, Protzen discussed his early findings in a report in *Scientific American* (February, 1986). In 1993 his findings were published in the book *Inca Architecture and Construction at Ollantaytambo,*[50] published by Oxford University Press. This book was also published in Spanish as *Arquitectura Y Construccion Incas en Ollantaytambo* in Peru in 2005, and can be found in some bookshops in Lima or Cuzco.[51]

Protzen is currently a professor at the University of California at Berkeley but originally got a diploma in architecture at the University of Lausanne in Switzerland. Said to be an extraordinary researcher, he is interested in "design theory and methods, Inca architecture, and construction techniques." He has received honors that include research fellowships from the Swiss National Science Foundation and the University of California, and an International Architecture Book Award. He currently teaches courses on design theories and methods, logics of design, and research methods.

Fortunately for those of us interested in ancient technology in Peru and Bolivia, he is also interested in the subjects of "the logics of design, design,

planning, and construction principles of ancient civilizations, particularly Pre-Columbian South America." His books and research are very important. Let us look at what he has to say.

In his 1993 book Protzen addresses, as best he can, all the major issues at Ollantaytambo, including the quarrying, transporting and cutting and dressing of the stones. He also concludes with a short but interesting chapter on the "chronology" of Ollantaytambo. Why should there be a chronology of this site if it was built by the Incas? Well, because the keystone cuts and the clamps or "cramps" as he calls them (the more technical word) are an indication, which he does not deny, that the builders of Tiwanaku and Puma Punku were also the original builders of Ollantaytambo. This of course upsets the traditional archeological dogma that all the monumental sites in the Sacred Valley and around Cuzco were built by the Incas many hundreds if not thousands of years after the building of Tiwanaku.

Since Protzen is trying to defend the status quo his chronology chapter is a cautious check into the discovery of stone blocks with keystone cuts in them, both at Ollantaytambo and at the Qorichancha-Temple of the Sun in Cuzco, another building which may be pre-Inca. This is a sensitive topic for Protzen, as he wants to be seen as part of the establishment and mainstream, since his university and academic career may be at stake. Protzen says:

> An argument persists that the Wall of the Six Monoliths [the "Sun Temple" at Ollantaytambo] and the vanished structures from which blocks have been recycled predate the Incas and were the works of earlier Tiahuanaco culture. Support for the argument is found in the step motif carved on the fourth monolith and in the T-shaped sockets cut into several blocks, both believed to be hallmarks of Tiahuanaco-style architecture. Even Ubbelohde-Doering could not help but be reminded of Tiahuanaco when looking at these details and the bond in the First and Second Walls. He did, however, explicitly write that there were no reasons to believe that any of these structures at Ollantaytambo predated the Incas.
>
> A variant of this argument is that Tiahuanacoid elements were brought to Ollantaytambo by *Qolla mitmaq* stonemasons—that is stonemasons from around Lake Titicaca …the presence of *Qolla mitmaq* at Ollantaytambo is historically documented. The only question here is why stonemasons from around Lake Titicaca should have remembered anything Tiahuanacoid when for several centuries nothing like it had been built.

If anything at Ollantaytambo reminds me of Tiahuanaco it is neither the step motif nor the masonry of the First and Second Walls, but the T-shaped sockets and regularly coursed masonry of strongly altered andesite. The step motif was widely used by the Incas—at Ollantaytambo it appears also on the splash stone of the Bano de la Nusta fountain—and there is no reason to believe it derived from Tiahuanaco. The bond of the first and second walls is more Inca-like than it is Tiahuanacoid, as will be shown.

Many T-shaped sockets are indeed found at Tiahuanaco, in particular at the site of Pumapunku, where some still line up back to back on adjacent blocks. From Tiahuanaco it is known with certainty, since many cramps have been retrieved, that copper cramps inserted into the sockets held the building blocks together… cramp sockets were found on loose building blocks retrieved from the church and monastery of Santa Domingo at Cuzco after the earthquake of 1950. In Cuzco, as at Tiahuanaco, the shape of the cramps was not limited to T; they were also made in the U, Lorrain cross, double T, and other shapes. The cramp sockets at Ollantaytambo, however, are exclusively T-shaped. Neither in Cuzco nor at Ollantaytambo were the sockets found on blocks in situ, all blocks with sockets have been moved out of their original context, and, as mentioned before, no cramps have ever been found. Unfortunately, these facts confuse rather than shed light on the questions of who the builders were who used cramps in their construction in Cuzco and Ollantaytambo and of where the original buildings stood.

The masonry of green, strongly altered andesite, with its blocks of perfectly flat wall faces and regular coursing of ashlars of equal height, bears a striking resemblance to masonry at the Pyramid of Akapana at Tiahuanaco, for example. Even the best of regularly coursed masonry in Cuzco shows minor variations in height within a course, resulting in wavy horizontal joints, and even the smoothest of walls reveals traces of sunken joints. The same holds for the First and Second Walls of Ollantaytambo. Sunken joints are a direct consequence of the dressing technique used by the Incas, and the wavy courses are due to the one-on-one fitting and laying technique. What, then, is intriguing about the masonry of strongly altered andesite, as exemplified in Llanos' wall of twelve ashlars, is that it

suggests different dressing, fitting, and laying strategies. Stones may have been prefitted on the ground and subsequently hoisted into place on the wall. Evidently, such a technique is most profitably used in regularly coursed masonry with all ashlars exactly the same height. A careful study of the orderly rows of blocks excavated by Llanos may indeed reveal the secret of how the strongly altered andesite blocks were cut and assembled. Unfortunately, too much debris has again accumulated between and over these blocks, which cannot be investigated in detail without reexcavation.

The Bano de la Nusta at Ollantaytambo.

If we assume that a different construction technique was used to erect the walls of green stones, questions arise as to whether this technique is a late development, a refinement of an older technique, or an old one, possibly predating the Incas. And was the masonry of green stones contemporaneous with rhyolite masonry in which T-shaped clamps were used? With the evidence at hand, these questions cannot be answered.[50]

So, in academic speak, we have Protzen approaching the sensitive topic of whether the presence of the keystone cuts at Ollantaytambo and the Qoricancha in Cuzco are evidence that many of the structures in Peru that are attributed to the Incas are probably actually pre-Inca in origin. He is basically saying “yes” to this question but with the caveat that “with the evidence at hand, these questions cannot be answered.” Here he uses the term “clamp” instead of “cramp.” In the Spanish version of his book clamps and cramps are called “grapas.”

Protzen starts to ask the right questions, but then suddenly stops, because the obvious conclusions would lead him far from the current academic dogma—and he knows he cannot go there! The crux (Andean crux, if you will pardon my pun) of the matter is this, and it is clearly stated by Protzen: keystone cuts and

the clamps that go with them (although no clamps were ever discovered in Peru, he says) are associated with Tiwanku and Puma Punku. So, he admits, it is not some "wacky" idea that stones with keystone cuts in them—found at Ollantaytambo and Cuzco—should be associated with Tiwanaku.

But there is a big problem here, which Protzen admits. Tiwanaku culture flourished about one thousand years before the Inca Empire and its supposed building of the structures attributed to it today. So… how to explain this?

Protzen, to his credit, brings up the standard explanation in archeological circles: the builders of Ollantaytambo were brought from the Lake Titicaca area where they must have seen the use of keystone cuts at Tiwanaku and Puma Punku and then brought them to Cuzco and Ollantaytambo. But Protzen isn't buying this argument at all. He says, "The only question here is why stonemasons from around Lake Titicaca should have remembered anything Tiahuanacoid when for several centuries nothing like it had been built."[50, 51]

This is completely the point, and Protzen totally gets it, while other mainstream archeologists don't seem to quite comprehend this important fact: keystone cuts are an undeniable fact at the megalithic sites of Cuzco and Ollantaytambo, but they were not used by the Inca. What are they doing there?

Even given the evidence of the keystone cuts, the scholars were unwilling to change their story. Whether or not keystone cuts were associated with Tiwanaku, built by a different culture hundreds of years before, the structures around the Sacred Valley had to have been made by the Incas. It does not make sense, but it is the academic dogma and Protzen has no real choice but to somehow stick with it, otherwise he could lose his job and academic standing. Therefore he says that with the evidence at hand he just cannot figure it out. Protzen points out that no copper or bronze clamps or "cramps" have been found either at Ollantaytambo or Cuzco. Does he think that some stonemason cut these careful sockets into the hard granite for no reason? Was no molten metal clamp ever to have been poured into the keystone cut "Tiwanaku-style"? The obvious answer, which Protzen probably realizes, is that the missing clamps were taken by people who happened upon the ruins over the years, and melted down for other purposes. This would explain their absence, particularly in Peru where the Spanish, who were known to be very fond of metals, were doing a whole lot of looting.

It is interesting to note here that no dating technique was undertaken by Protzen to try and solve the mystery of the keystone cuts. This is because there is no way of dating cut stone blocks at present. Any dating must be in the "context" of the site itself and objects other than stones must be dated. We have seen the pitfalls of this dilemma, and it is to Protzen's credit that he avoided that course.

Protzen strangely ends his book with this brief and mysterious admission. Keystone cuts and everything associated with them are from the Tiwanaku culture, but the Incas built these structures hundreds of year later— so I cannot figure it out, he says. I need more data. *Voila*, Protzen keeps his academic job, but still manages to salt the waters with his own vague opinion that the Incas must have inherited some of these structures and used them for their own purposes. But this is not all that we can glean from Protzen's interesting book. His careful examination of the Ollantaytambo quarry and his theories on how the stones were moved are just as important.

The Moving of the Stones from the Quarry

As I stood on the edge of the massive *Kachiqhata* quarry with Steve and Jennifer high on the hill above the Urubamba River, I looked at the massive rockslides that came down from the mountain in different places. The quarry here is not a normal quarry in the strict sense, where stones are removed from bedrock by undercutting them, or cut out from a cliff or other rock face. It is an area of huge rockslides where giant boulders of granite have fallen from cliffs above. There are different sized rocks, from small to gargantuan. It was here that the builders of Ollantaytambo—whoever they were— came to carefully select their largest stones.

There are three main slides of rocks and a road begins at the bottom of the central slide. It is apparent that from here the squared rectangular blocks of red granite were moved down the mountain, first on a road that went slightly downhill while traversing the hillside to the south. This is the same road (or trail) we had just taken to the quarry, starting at the bridge in town; but the giant blocks would not have been taken all the way to the bridge. There is a spot in the road, approximately opposite the site of the Sun Temple, where the blocks would have been pushed off, down a big slide, to land on the west side of the river.

Protzen says that the largest of the stones from the quarry weighs an astonishing 106,000 kiloponds. A kilopond is also known as a kilogram-force and is a gravitational metric unit of force. It is equal to the magnitude of the force exerted by one kilogram of mass in a 9.80665m/s^2 (meters per second squared) gravitational field, which is what is known as "standard" gravity. One kilopond or kilogram-force is approximately 2.204622 pounds. A stone that was 106,000 kiloponds would weigh an astonishing 233,200 pounds or 116 tons. This is the weight of the stone that Protzen would be using for his calculations on moving the stones in his book (some of which we will see shortly). It is of considerable size and weight, and Protzen is able to make some impressive

calculations—but again he cannot completely figure it out! Let us look at his important study on moving the stones down the mountain from the quarry, across the swift-flowing Urubamba River, and then to the mountain ridge where the remains of a ramp can be seen.

Says Protzen:

> Not counting those remaining in the quarries near *'Inkaraqay,* some forty blocks of coarse-grained rose rhyolite [lying between the quarry and the Sun Temple] signal the way over which the stones were transported from the quarries to the construction site of the temple area at the Fortress of Ollantaytambo. All blocks show signs of having been worked. From the southern quarry, the blocks traveled eastward over ramps to slides leading down a ravine and over a road to *'Inkaraqay*, where they joined the blocks coming from the western and northern quarries. From here, all blocks were hauled over a road to the last slide, plunging toward the Urubamba River. One block is still stuck in the slide, and four more are dispersed on the alluvial plain between the bottom of the slide and the river. Patches of differential growth patterns in the crops raised on the alluvial plain may indicate that more blocks, no longer visible, are buried there.
>
> There are indications that the last slide was not always in use or that it became a shortcut not originally intended. At the head of the slide, an old ramp, the continuation of the road above, turns east; it can still be traced for some 250 meters before it runs into a landslide that has wiped all visible remains. If we project the course of the ramp from where it ends today, it may have reached the river just west of *Runku Raqay.* Here, the river emerges from a canyon. The river is still narrow and deep, the left bank is very steep, and several terraces on the right bank bar the way, making this an unlikely ford for blocks weighing tens of metric tons. It is thus possible that the ramp was abandoned because it was impractical or simply because the slide was more expedient.
>
> The last slide points exactly at a large abandoned block on the opposite riverbank, just beyond the railroad tracks, suggesting that the river was forded by the direct prolongation of the slide. Harth-terré argued that the blocks were moved across the river near an island in the river that is about 600 meters downstream from the slide. Considering the tremendous forces of the rushing Urumbamba

> River, swelled by the heavy summer rains, one may question whether that island even existed 500 years ago. As Harth-terré noted, the Incas had canalized the Urubamba River along this particular stretch, leaving the river to find its own course. My view is that the location of the fording must have changed over time, perhaps as a function of the river's flow and the conditions of its bed and banks after the summer rains. I am led to this view because the four blocks on the left bank and the twenty or so blocks on the right bank are relatively widely scattered, suggesting that no preestablished path was followed. Also, I have not been able to detect the slightest indication of a roadbed linking the riverbank with the foot of the ramp leading up to the Fortress. On the left bank, a causeway is intimated by a differential growth pattern in the crops. Since it does not line up with the slide, it is not clear what purpose this causeway, if it existed, may have served.
>
> The volume of water carried by the Urubamba River is from three to four times larger in the wet season than it is in the dry season, when the water level in the area of the fording reaches about 1 to 1.2 meters. It seems reasonable to assume, then, that the hauling of blocks across the river was not a year-round operation but was limited to the winter months, when water levels were low.
>
> As mentioned earlier, once across the river, the blocks were moved along an undetermined path to the base of the Temple Hill and up a long inclined plane with a slope of 8° to the temple area. The last stretch of this plane is supported by a formidable retaining wall 16 meters high.[50]

So here we have some fascinating information from Protzen who has done a pretty good job of finding the route that the stones took, although he does not address how they got across the river. Certainly the builders would want to do it when the river was at its lowest point, but he still does not know how. It seems they did not build a bridge. No bridge made of wood could probably hold the largest blocks, anyway. They must have been either dragged or "flown" across the river.

It is curious that so many blocks made it across the river, but were abandoned on the eastern side of the river. One would think that the hard part had been done, getting them across the river, yet Protzen says that 20 were abandoned before reaching the fortress. All these abandoned blocks of red

granite (rose rhyolite) are known as the “lazy stones” and there clearly are quite a number of them—40 in all, according to Protzen, not counting some that are now buried.

These “lazy stones” are all over the place. At the very start of the four slides of the quarry, a number of gigantic blocks fully dressed and squared lay ready to make the trip. A number lie along the upper road to the slides, and some made it down to the western riverbank. A few giant blocks lay on the eastern side of the river going up the bank, some more lie in the fields on the way to the fortress and several blocks are beginning to make the ascent up the ramp to the small plaza. Even there, among blocks that have been actually put into place a few lazy stones can be found.

It is mystifying why so many blocks of stone were apparently abandoned along the way to the temple site when so much effort had been expended in preparing them and moving them as far as they got. But what really boggles the mind here is that any of them actually made it to the narrow ridge of the Sun Temple at all! How did they maneuver giant blocks across the ground, up to a small plaza on a sharp, cliff-faced ridge on the edge of the ancient town of Ollantaytambo? Protzen is determined to figure it out and the first thing that he notices are “drag marks” on most of the blocks. Says Protzen:

> How were the blocks, some of which weigh in excess of 100 metric tons, transported over 5 kilometers from the quarries, across the river and up to the Fortress? I found the first clue to this problem on block 29 on the southwest side of the Sun Temple, on which one observes a smooth, yet uneven, polish traversed by fine, more or less parallel striations. This polish, I contend, results from dragging the blocks over the bare surface of the roadways. Inspecting the polished face of this block, one notices that the polish extends over only the prominent portions, not the depressions, of the face. Close inspection of the recessed surfaces reveals sharp boundaries between the polished and the nonpolished surfaces on the opposite end. From this particular feature, it is possible to infer the direction in which the block was dragged. The sharp edge of the recessed part was the leading edge; the blurred part was the trailing edge. As the block moved forward, the surface material on the road ground against the protruding portion of the block; the material escaped into any depression, only to accumulate at the back of the depression, where it got compressed and ground between the roadbed and the block, so that the depression’s trailing edge was worn down.

> Some of the abandoned blocks along the road from the quarries to the Fortress were buried too deep to have all their faces inspected, but all other blocks have at least one face with polish and striations. Drag marks are still detectable on many wrought stones strewn about the temple area. As one would expect, drag marks are conspicuously absent on blocks still in the quarries. Drag marks are always found on the broadest face of a block, indicating that blocks were transported in their most stable position. On some blocks, drag marks can be found on two opposite faces, suggesting that the blocks were turned over during their transport, perhaps when tumbling down a slide or when fording the river.
>
> The presence of drag marks does not, of course, exclude the possibility that the block were moved some other way, at least along parts of the road. It is imaginable that the drag marks resulted only from the blocks slithering down the slides, although I doubt that the slides were long enough to produce such extensive marks as those observed on most blocks. Not only were the slides hollowed out in a troughlike manner, but so were the ramps in the quarries. The hollowing can be explained by the successive passages of blocks, each one carving out a little bit more of the road surface.[50]

What is interesting to note here is that Protzen is saying that drag marks can clearly be seen on the stones that were moved, and those drag marks could be the result of these cut and dressed stones going down the several slides that descend from the quarries to the Urubamba River. He does not think the slides alone would have produced the marks he sees, but admits it is possible—this could be important as we will see later. But how did these super-heavy stone blocks get moved along the trails to these slides, and then across the river and up the other side? Protzen thinks they were dragged, which would accentuated the drag marks to a degree consistent with what he observed. This must have been a tremendous engineering feat and required what would seem to be superhuman effort.

Indeed, a calculation can be made to ascertain the number of humans pulling on ropes that would be necessary to attain the force needed to move the stones. And Protzen did this—the answer that he came up with was that 1,800 people pulling on an elaborate rope harness could drag a gigantic block that was held in a rope webbing that gripped the stone.

How was all this done—and where did the 1,800 people stand in certain

difficult places, such as the final complicated phase of getting the blocks onto the small plaza on the ridge? Protzen addresses that problem later, but first let's review the basic calculations:

> If the blocks were, in fact, dragged with ropes over the bare surface of the roads, this raises such questions as: How many people did it take to drag a block of 100 or more metric tons? How were the people harnessed to the blocks? How were the ropes attached to the block? How were the blocks maneuvered around curves and corners?
>
> Answers to the last three questions depend on uncovering descriptions of the transportation technique far more detailed than the ones [discussed] above or on finding material traces on the blocks themselves. The first question is independent of such evidence, since it lends itself to analytic treatment. The force required to drag any block is given by the equation

$$K = f \bullet P \bullet \cos a \pm P \bullet \sin a$$

> where *K* is the required force, *f* is the coefficient of friction, *P* is the weight of the block, and *a* is the slope of the ramp. The + is used to compute the forces to pull uphill; the —, to drag downhill. The weights of the blocks and the slopes of the ramps are unknown. The coefficient of friction depends on the surfaces of both the blocks and the ramps. What the surface of the ramps was in Inca times is not known. The current conditions suggest two possibilities; the ramps either were surfaced with a ballast of broken rocks or were finished with compacted dirt. Since none of the standard physics handbooks offer adequate coefficients for either of these conditions, it was necessary to establish empiracally appropriate values for f. I built two surfaces approximating the two road surfaces encountered today at Ollantaytambo. With the aid of a dynomometer, I dragged a block of 42 kilograms repeatedly over these surfaces. The average results were f = 0.75 for compacted dirt, and f = 0.7 for a ballast of broken rock. The latter was somewhat smaller than the former because the loose broken rocks had, to some extent, the effect of ball bearings.
>
> Assuming the roads were made of a ballast of broken rock, computations yield the following values for the requisite forces to drag a block along the different stretches of ramps from the quarries

to the construction site at the fortress. The slope at which friction is overcome by the sheer weight of the block—that is, at which the block starts to slide downhill on its own—is approximately 38°. This is very close to the slopes of the various slides along the transportation route. A small impulse was all it would take to send a block skidding down a slide. Down a slope of 8° —the approximate incline of the road near *'Incaraqay*—the necessary force to move a block would be equal to about 55 percent of its weight; along a flat stretch it would be 70 percent, and up a slope of 8°, the approximate incline of the ramp to the fortress, it would be 84 percent. Thus to drag uphill the largest block (which weighs 106,000 kiloponds) remaining in the quarries of Kalchipqhata, a force of 89,000 kiloponds would be required. Assuming that a person can pull consistently with a force of 50 kiloponds, it would take some 1,780 people to accomplish the job. This may seem like a very large number of people, but I find a certain consistency between this number and Cieza de Leon's count:

> Four thousand of them were breaking
> stones and extracting stones;
> six thousand were hauling them
> with big ropes of hide and leaf fibers…

Although in the passage Cieza was writing about the construction of the fortress of Saqsahuaman, not that of Ollantaytambo, I see no reason why one could not assume that the Incas used similar building practices at all their highland sites. The moving of heavy stones by 1,800 workers at Ollantaytambo is commensurate with the longdistance transportation of heavy and bulky objects in other ancient cultures in both the Old and New Worlds. One need only be reminded of the orthostats of Stonehenge, the colossal statues of Ramesses II at Luxor, the enormous Idol of Coatlinchan at Teotihuacan, or the stone giants of Easter Island to appreciate the remarkable achievements of ancient transportation engineers. A tomb painting at El Bersheh, Egypt, and a limestone tablet from

Nineveh depict the dragging of heavy statues by scores of men tugging on long ropes hitched to sleds under the statues. It is not clear whether these representations of ancient transports represent the actual number of draggers or whether only "an impression of a great crowd of men drawing on the ropes was intended." Engelbach estimated that a work force of 6,000 men would have been required to move the unfinished obelisk at Aswan.

To reduce the work force required in hauling, one has to invent a mode of reducing friction or of increasing the effectiveness of the work force's output. Short of the wheel, which the Incas did not know, there are several other possible ways of reducing friction, including the use of either rollers or skids and lubrication.

The use of rollers is frequently mentioned in the literature, but the evidence in support of this hypothesis is meager and certainly not conclusive. Skids can be used in two ways: they can be fixed to the object to be moved, or they can be placed on the roadbed like railroad tracks. Outwater argued that the latter method was used in conjunction with rollers at Ollantaytambo. Unfortunately, the evidence for the use of skids does not fare any better than that for the use of rollers; at best, it is incidental. In an experiment conducted in 1986, a group of eight workers at Ollantaytambo were asked to move a 1.5-ton building block without instructions on how to do it. They resolved the problem by laying down two long poles, tracklike, over which they pulled the block with ropes while pushing it with levers from behind.

The use of lubricants is illustrated in the El Bersheh painting. A man standing at the prow of a sled is pouring a liquid into the path of the sled. The evidence for the use of a lubricant, probably wet clay, at Ollantaytambo is merely circumstantial. A stone-polishing experiment, to be described in detail in Chapter 11, revealed that to produce a highly polished surface, an exceedingly fine abrasive was needed. It is thus unlikely that the polish observed on the dragged blocks was brought about by the coarse road ballast, unless it was mixed in with substantial amounts of very fine sand or clay. If clay was used on the roadbeds, wetting it would have helped the blocks to move along. It would have reduced the coefficient of friction from 0.7 to about 0.2, a change that could have reduced the requisite transportation crew to 715 people.[50]

So, we can gather from Protzen's detailed analysis that it might have only taken 715 people to haul the largest blocks at Ollantaytambo if some kind of sled (and a system of wetting the soil, as the Egyptians were known to do) had been used in the dragging of the blocks. However, he does not think that they used such a technique, nor any kind of roller or lever.

The drag marks observed by Protzen seem to be on all the stones that were removed from the quarry. During the slides that each block would have to have made down to the river it would have acquired a certain type of drag mark that would also be similar to the drag mark made on the stone if it were being dragged across a level road or slight slope. If the megalithic block were being forced forward by levers, then a different type of drag mark would also be seen on the block. Protzen could not find this type of mark.

Says Protzen:

> In the transport scenes on the Assyrian tablets, the sledges are not only pulled on long ropes, but also shoved from behind with long levers. The Assyrians were obviously aware of the amplifying effect of levers, even if their way of pulling the levers down (shown on the tablets) was not the most effective and if at the angle at which the levers were applied the load was more likely to be heaved rather than pushed forward. To get the most forward push, the levers had to be kept as vertical as possible, and to get the most leverage, the pull had to be exerted at the very top of the lever. The short sides of the largest blocks at Ollantaytambo are wide enough to receive at least two levers. Assuming a leverage ratio of six to one and about sixty workers to pull on each lever, the workers cold produce a combined effective initial shoving force of some 35,880 kiloponds. The output of the lever crews is thus about 40 percent of the calculated 89,040 kiloponds require to move the block discussed earlier uphill on a slope of approximately 8°. Accordingly, the pulling crew could be reduced by 40%, from 1,800 to 1,080 people. Adding to that the lever crew of 120 people, one is left with a total transportation crew of 1,200.
>
> One could imagine that to harness the pulling crew to a block, a big net, into which four or more long ropes were woven, was thrown over the block's top and sides. As shown on the Nineveh tablet, each rope would have had a series of twin loops attached to it at 80-centimeter intervals for two men to pull, one on each side of the rope. To keep the ropes at regular intervals, a yoke of some sort

would have had to be mounted at the front of the block. Assuming that the four long ropes were spaced about 160 centimeters apart. 1,800 people cold have been deployed along the ropes, 450 to each, 225 on either side. In this fashion, the whole train would have stretched over 187 meters [the length of two football fields] along the roadway.

If I have any reservation about my explanation of the technique of dragging at Ollantaytambo, it is my inability to propose a plausible way of how a large number of people deployed along a mountain road (at most 6 to 8 meters wide) negotiated turns, wide or sharp, without the pulling train overshooting the turns. Overshooting a turn would let the crew pull the block right up to the turn. Once there, the block cold be pointed into the new direction with levers, and the crew rehitched to the front of the block. Unfortunately, the accidented [uneven] topography along the transport route at Ollantaytambo would not allow the pulling train to go beyond any of the critical turns.

The problem would not be resolved with smaller pulling crews. The reduced crew using wet clay or the crew aided by levers would have encountered the very same difficulties in negotiating turns. It appears that only crews working exclusively at the back of a block could properly approach and complete the turns. A combination of levers and lubrication could resolve the issue. The force put out by the crew working the levers would be sufficient to push the largest block uphill to the Fortress *if the* coefficient of friction was kept down to 0.2 or less. What I called *drag* marks would then be *shove* marks. The latter would be indistinguishable from the former, with perhaps one exception. The tendency of levers is to lift the blocks at the back, pushing the front into the ground. Thus the abrasion marks should be most pronounced at the front of the block and should gradually diminish toward the back. To date, I have not detected a fading of the abrasion marks on any block.[50]

So, Protzen is unable to find any “fading of the abrasion marks on any block” and therefore cannot find evidence that levers were used in the movement of the blocks. This lack of the use of levers seems to betray whatever ingenuity that the transport engineers might have had. In other words, it would seem that the planners and executers of this elaborate scheme to get gigantic blocks from a

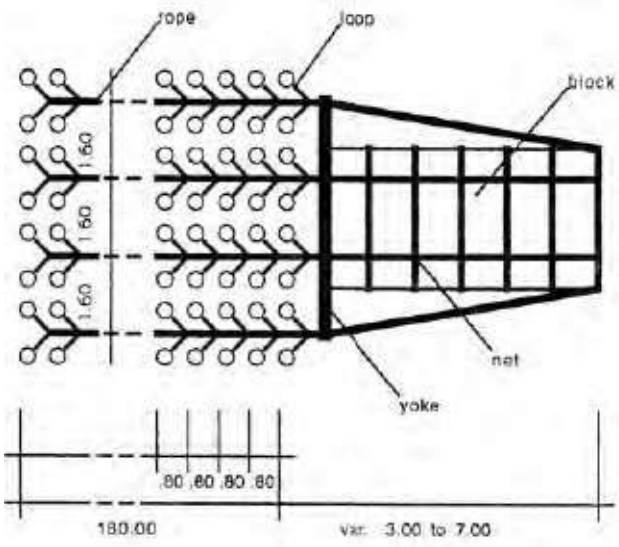
mountain rockfall across a river and up a mountain ridge, were not able to think of using things like rollers or levers. Yet, they were able to accomplish things that seem superhuman by even our modern standards! Was it all done with just the brute strength and sheer numbers Protzen is dutifully calculating for us?

This Swiss-American engineer is obviously fascinated by the how and why and when of the building on this amazing structure, as am I. Indeed, there are many such amazing structures in Peru and Bolivia and they contain many mysteries, but Ollantaytambo stands out, which is why Protzen has intentionally made a careful study.

How could this crew of 1,800 people have negotiated the narrow turns required to bring these gigantic blocks to the small plaza where the Fortress stands? Where did these people stand when they were dragging this massive block up to the sharp ridge of the Ollantaytambo fortress? Protzen cannot answer these questions. He has figured out how many men it would—at minimum—take to drag some 100-ton block of red granite, squared into a rectangle, up the hill to the Fortress plaza. But, he cannot figure out where all these people stood while doing so!

Did they build some gigantic ramp to allow this teeming team of haulers to pull with all their might on the intricate web of ropes and yokes that made the hauling of this massive block possible? Was this ramp later dismantled, and then the terraces now seen on the steep hillside constructed to grow crops? This seems highly unlikely and Protzen does not even mention the possibility.

Yet, this is exactly what various Egyptologists have proposed over the centuries to solve the mystery of the building of the Giza Pyramids, especially the Great Pyramid. Vast ramps going out from the pyramid, or in a spiral around the pyramid, have been conceived. These huge ramp complexes are then dismantled to the point that there is no trace of them left. This is not the case at Ollantaytambo, where the remains of a ramp going up the west side of the steep ridge can be seen. But this ramp could not accomodate the team described by Protzen, or the way it would have to have executed the curves.



Protzen's drawing of the rope harness that he theorizes might have been used at Ollantaytambo.

In short, Protzen has done the basic calculations necessary to show what would have been needed to move these 100-ton blocks with brute force. One would need 1,800 laborers and a strong rope harness and network, including yokes, to drag these blocks over level or slightly sloped surfaces. But the solutions to such problems as getting the stones around corners, across a river or up onto a small plaza on a narrow ridge elude him. Such beguiling questions certainly add to the mystery of the construction of these impressive sites. How did these builders—Protzen presumes they were the Incas, though he seems to have his doubts—do this clever trick? We assume that they were "primitive" in the sense that they did not know about the wheel or the use of levers, but they still managed to do something that we cannot yet comprehend. At least in this way, they are more clever than we are!

There are some very interesting alternative theories on how this was all accomplished, and we will discuss them later. First, let us look at how Protzen says that the quarrying was done on the mountainside across the river from the fortress. Curiously, he notes a lack of tool marks on the stones, which seems highly unusual. Says Protzen:

> In the quarries of *Kachiqhata*, the Incas did not practice quarrying in the technical sense. The stone was neither split off a rock face nor detached from bedrock by undercutting. The quarrymen simply went through gigantic rockfalls, carefully selecting raw blocks that met their specification. As far as I can ascertain, once a suitable

block was located, it was roughed out before it was sent on its way to Ollantaytambo. The fine work and the adjustments for the final fitting were made at the construction site. Work often was started on a block before the ramp to it had been finished. Evidence of this is particularly obvious at the head of the highest ramp in the southern quarry, where two blocks—one 4.5 x 2.5 x 1.7 meters (block 16), and the other 6.5 x 2.7 x 2.1 meters (block 17)—partially roughed out, are raised on working platforms not yet connected to the ramp.

…there is no evidence that the Inca quarrymen used the channel and wedge technique in the quarries of *Kachiqhata.* Quite to the contrary, there are several examples demonstrating that the technique was not used, although it would have been most appropriate. Two blocks, block SA-15 near *Nawinpata* and block 2 in the northern quarry, each with a deep groove about 15 centimeters wide all around, suggest that to part blocks rather than split them with wedges, ancient quarrymen cut an ever deeper "collar" around the blocks until they were separated. An incipient collar is found on block 4 in the southern quarry. Even more convincing is the work on the huge block 5, atop the retaining wall of *Ranrakural* in the northern quarry. A long fracture plane traverses the block a few centimeters from, and roughly parallel to, its north face. Rather than trying to split off the unwanted part of the block with wedges, the quarrymen opted for carving away this part little by little, as is indicated by the work marks covering the entire north face of the block. The faint tracing of a channel along an obvious fracture plane of block 6, just above the second ramp in the southern quarry, is too broad to be interpreted as a wedge channel; it is better explained as an incipient collar, or trench, across the block's face.

If splitting was not the practice with large stones, it was the predominant technique for the extraction of small stones of fine-grained rhyolite. When working this material, the quarrymen took advantage of the naturally occurring fracture planes in the rock. In the northern and southern quarries, they produced small stones about 60 to 200 centimeters long, 20 to 80 centimeters wide, and 20 to 50 centimeters high. Many such stones, the most distinctive of which are on the second ramp of either the north or the south quarry, are still scattered around in working areas. These stones were meant

as lintels over doorways, windows, or niches or as steps in the construction of stairways. There are no identifiable tool marks on these stone, yet there is no doubt that they were split apart because several of these stones fit together perfectly along the spitting plane. Clues to how these stones were split may possibly be gleaned from the western quarry.

The outstanding attribute of the western quarry is its many long, thin blocks of fine-grained rhyolite in various stages of production that lie just off the main ramp. Some of these blocks are almost 7 meters long and have a cross section of only 40 x 40 centimeters. From the way some of these long, needlelike stones are strewn about, it is evident that long blocks with large cross sections were split repeatedly into blocks with ever smaller cross sections. Here, as on the small blocks in the other quarries, there are few recognizable tool marks. The rock in this quarry has two distinct fracture planes more or less perpendicular to each other that are spaced from 40 to 50 centimeters apart. This corresponds closely to the cross section of the “needles.” Did the Inca quarrymen drive wedges into the incipient cracks, or did they, as is often reported in the literature, pour water into the cracks to take advantage of the expansion of freezing water as a method of driving the blocks asunder?

I have ruled out the action of freezing water as the method because in the many winters I have spent at *Kachiqhata* I have often experienced a light frost on the ground, but never a freeze hard enough to produce ice deep in a crack of a rock that has been heated all day long by the sun. Unless the climate is drastically warmer today than it was 500 years ago, it seems unlikely that the Inca quarrymen practiced this technique at *Kachiqhata*.

If wedges were used, they must have been of metal, since the natural fractures in the rock are often no more than hairline fractures into which wooden wedges could not be driven. The use of wedges could possibly explain the serrated edges encountered on many “needles.” The lateral pressure exerted on the rock while the wedge is driven into the crack may shear off flakes along the fracture line, thus producing the serrated edge on the workpiece.

The use of wedges does not explain the rounded edges found on many other work pieces; neither does it account for the broad, but

> shallow channels, 15 to 25 centimeters wide and 3 to 5 centimeters deep, found on huge boulders along visible fracture lines. The channels and the workpieces' rounded edges result from pounding, since in both cases one can detect the typical pecking scars. The channels show no traces of wedge holes and are themselves far too wide for the application of wedges. To be operative, wedges must be very pointed—that is, have a very acute angle between their two active faces to convert the largest possible force from hammering in the wedge (or the force from the swelling of wetted wooden wedges) into lateral forces driving apart the blocks. Correspondingly, the wedge holes or channels into which the wedges are to be driven must be narrow to hold the wedge as closely as possible. The channels at the western quarry do not have the appropriate profile for an efficient use of wedges.
>
> … What were the long, needlelike stones of the western quarry used for? I was told by local informants, as Squier was told before me, that the "needles" served to span the bridge over the Urubamba. This explanation is doubtful, as the respective spans from either bank to the still-existing pier of the Inca bridge in the river are about 20 to 30 meters long. However, the needles are too short, but if they were long enough, they would probably break under their own weight. Curiously, there are no abandoned needles along the transportation roads leading from the quarries. The only similar blocks at Ollantaytambo are the lintels over the large doorways on the Square of *Manyaraki* and a few specimens lying around northeast of the square, near the so-called Bano de la Nusta.[50]

So, Protzen is concluding that wedges were not used to split the rock and if they were used, they would have to have been made of metal. A metal wedge in this case would have to be made of a pretty hard metal such as iron. One wonders if a bronze wedge would have worked in this situation. Also, there is a lack of tool marks, even on the largest blocks. I think that Protzen is looking for very specific tool marks from hammers or wedges and missing tool marks made by implements he would not expect to be in use at the site. When one looks with fresh eyes at these squared blocks in the quarry, some of which are gigantic—weighing 100 tons or more—they look like they have been cut with a very large saw, and they do have obvious tool marks on them.

The long, narrow stones that he is calling "needles" are curious, and like the

thicker flat stones that he says were to have been used as lintels or as stairs, they are there at the quarry, dressed and ready to go. These smaller blocks would have been far easier to move than the giant blocks, yet they were never taken to Ollantaytambo. Why is that? It seems that all construction activity came to a complete and sudden halt, including moving any of the smaller stones. Something, prior to the arrival of the Spanish, interrupted the megalithic building at the site. It was not revived at the end of Inca times and very little new construction happened at Ollantaytambo until the modern era, leaving us with what we can see today—a mixture of ancient, colonial and modern construction. Ollantaytambo is a beautiful and fascinating town, much of it megalithic, that in many ways is unique in the world. It is a quaint and miniature Cuzco that can send the visitor back in time like some sort of time-travel machine!

The Bridge over the River Urubamba

Protzen finds the long needlike stones to be unusual and cannot really explain them. He was told the same thing as was the American archeologist Ephraim Squier in 1872 (he wrote *Peru: Incidents and Explorations in the Land of the Incas*, published in 1877), that these long thin stones were used to span the bridge across the Urubamba, presumably because they are like long stone planks, some up to 7 meters (21 feet) in length. Protzen states that he thinks they would break under their own weight if used to span any kind of long distance, like that to the pier-pillar in the middle of the Urubamba River, a span of about 30 meters.

It is worth noting here that this bridge, part of it quite ancient, is located in the southern part of the Ollantaytambo area far from the quarry, and is not thought to have been used for the transportation of the giant blocks. The central pier of the bridge is megalithic, and in olden times presumably linked two rope bridges across the river. Wooden spans, still using the ancient central pier, were later built, and no trip to Ollantaytambo is complete without a walk across this old bridge. How the huge blocks, from the quarry or elsewhere nearby (there are lots of big rocks all around Ollantaytambo), were moved across the raging river is still a mystery. These blocks were not only moved across the middle of the river, presumably during the dry season, but then stacked on top on one another to a height of 10 meters or so.

What were the long slivers of rock used for then? These would have been easy slices of stone to have been moved from the quarry, but they never were. Why? Are they actually just a waste product from the sawing and shaping of the gigantic rhyolite-granite blocks?

It seems that these slivers of stone were of little use in building. While they might have been used to span a doorway or window as a lintel, they are basically too thin. A thicker block of stone would really be needed, and such larger blocks are seen at Ollantaytambo in the many ancient doorways and windows that still exist in the current old town, and at the fortress itself, where a few lintels remain.

If Christopher Dunn and others, myself included, believe that the ancient Egyptians and the builders of Tiwanaku (and other sites) were using power tools, including giant saws capable of cutting granite, then could something like that have been happening at the Ollantaytambo quarry? Evidence backs up this theory that a huge mobile saw was used at the quarry; it took gigantic blocks from the rockfall and then began slicing these blocks until they were squared into some sort of rectangle and ultimately moved down the mountain. Many of the blocks never made that trip, as we have observed. However, they were laboriously cut and dressed for their mysterious journey. By any account of mainstream archeologists like Protzen, this was a slow and laborious task. Yet it was effort wasted because those stones never made it to their destination.

Could it be that a huge power saw was slicing, turning over and slicing again and again the red granite blocks of the quarry? Were the “needles” just waste products from the awesome cutting machine that did in a few minutes what it would take hundreds of men and man-hours to do in the tedious process proposed by the mainstream? If the Incas (or earlier quarrymen, as we surmise) were hammering out the truck-sized rectangular blocks chip by chip, there would be little rock of any size left over. There would only be great piles of chips. Since such piles of rock chips are not observed at the quarry, this would support my theory. But at the quarry, we can see stones of various sizes that, curiously, seem to be some sort of stone “waste product” that no one had a use for. Even later inhabitants of the town of Ollantaytambo, including Spanish colonizers, saw no need to go and collect these nicely cut, but too thin, pieces of granite. And, they were free for the taking for hundreds of years! They appear to be some byproduct of the dressing process of the huge blocks not worth using for anything— granite countertops and flooring aside.

As we began to approach the river again on the long descent from the quarry, our horses glad that they were returning home, I wondered about the movement of the giant blocks from the quarry. Even today, huge boulders of granite lay helter skelter in the river. I have made several river rafting trips on the Urubamba and they typically start upriver in towns like Yungay in the Sacred Valley but then stop just before the big rapids at the end of the Ollantaytambo Valley. These river rafting trips do go beneath the ancient/modern “Inca” bridge

but pull off to the right side of the shore a short time later.

Though it was never meant for the giant stone blocks to pass across, the ancient pier of the bridge and ancient walls on either side of the Urubamba are impressive megalithic structures. Peruvian engineers are using the center pier of the bridge today, and one has to wonder if modern engineers could make a central pillar in the river better than the one that was built by the ancients. This bridge seems to have been in continual use for many hundreds, if not thousands, of years. While the blocks of stone were never meant to cross the river on this bridge, it is likely that the quarrymen would have used this bridge to cross the river and then walk steadily uphill to the quarries and slides. Was there another bridge crossing the Urubamba farther downstream near the slides in ancient times? It seems doubtful.

The Lazy Stones and the Jumping Stones of Ollantaytambo

As we crossed the Urubamba River bridge on foot, waving goodbye to our guide and his stout horses, I thought back on the day and all the amazing things we had seen. The round stone wheel, the large block with the saw marks, the huge boulders from the rockfall and the porphyry cliffs above the quarry were all impressive sights for someone interested in gigantic stone blocks.

So what about the so-called “lazy stones” that were brought to various stages along the road leading from first slides of the quarry? Some of these “lazy stones” are quite large, while others are about half the size of the larger blocks that were successfully moved across the river and up to the small plaza at the fortress. One of the largest “lazy stones” was successfully dressed, moved down the slides, then across the river and right up to the final ramp on the west side of the fortress. But for some unknown reason it was never moved the final last bit uphill to the plaza. Why was all this effort expended on this stone—and the other “lazy stones”—when they were ultimately to be left on the side of the road? What is it that made these stones “lazy”?

Indeed, even the term “lazy” implies that there is something wrong with the stone, rather than with the transport crew that was “dragging” the stone. One theory on the moving of megalithic stones (to be discussed in greater detail in the following paragraphs) holds that the stones were not dragged at all, but moved by a type of levitation device that made the stones “leap” through the air. At Ollantaytambo, this process would involve applying the device to a stone to make it “jump” down the road from the quarry to the slides, where the stones would be pushed over the edge and retrieved at the bottom. They would again be made to jump to the river and across, and then up the slope to the fortress plaza.

This process would produce the drag marks observed by Protzen, since the stones would go down the slides, and there would probably be some skidding action as the jumps were made. There would be no lever marks made, which is consistent with Protzen's observations. Perhaps during this process it was found that certain stones were "lazy" and could not be made to jump properly, and they were therefore abandoned where the process failed.

This fascinating "levitation" theory, described to me in a telephone conversation in the fall of 2003, claims that quartz crystals, when connected in a series and shocked with high voltages, will "bend." The source claimed that when a crystal is struck, put under pressure, or "bent," it will give off a piezoelectric signal and, incredibly, it actually loses the gravitational force that would naturally pull it toward the center of the mass (in this case, the Earth). The crystal then becomes essentially weightless, no matter how heavy it was before being bent by high voltages. If such an effect could be confirmed, then gigantic blocks of granite, which are full of small quartz crystals, could theoretically be moved with very little effort, no matter how much they weigh when not having a powerful electric charge placed on them.

In a sense, this is the inverse process of piezoelectricity, which is a charge that accumulates in certain solid materials, notably crystals, when they are put under applied mechanical stress. Essentially it is electricity that is generated by putting pressure on a quartz crystal. Less understood is the inverse of this process, where an applied electric field causes the internal generation of a mechanical strain! In other words, when the crystal is electrified, it contracts or expands—it "bends" and flexes, changing its shape. This sudden change in the crystal causes the rectangular granite-crystal block to "jump." It also becomes briefly weightless during this period and could be "pushed" forward. It is an amazing concept! Sometimes the effect of pumping high voltage electricity into a crystal is called "the Hutchinson Effect," which refers to the Canadian experimenter John Hutchinson who is known for his videos on YouTube of objects losing weight and "floating" while under his "effect."

Picture this: huge granite blocks that have been quarried and dressed are then "electrified." This causes the block of crystalline stone to "bend" which causes it to become weightless. The blocks are then moved effortless through the air with guidelines such as ropes, or perhaps more high tech "pusher" beams of energy. A familiar movie scene eerily similar to this scenario is when the bounty-hunter Boba Fett in the *Star Wars* film *The Empire Strikes Back* takes the block of "carbonite" holding Han Solo aboard his ship. He is seen to be effortlessly pushing it ahead of him up a ramp onto his spacecraft. Could such a scene have

been witnessed in ancient Peru? It seems incredible!

A similar method may have been used in ancient Egypt to move the gigantic granite obelisks that continue to baffle archeologists and engineers alike. Not only is the purpose of obelisks unknown— Egyptologists theorize that they simply represent a ray of the sun—but the method of cutting them out of the quarry and moving them to and from the Nile, not to mention erecting them, is a mystery.

Christopher Dunn, in his book *Lost Technologies of Ancient Egypt*,[3] has an entire chapter entitled "In the Shadow of an Obelisk." In this chapter he discusses the deep incisions carved into some obelisks and the difficulty of making these without power tools. He also discusses the type of machinery necessary to carve out an obelisk. Says Dunn:

> There are no surviving tools or machines that can be shown to have produced this work. Those that survive are incapable of such accuracy, especially on an industrial scale. There are some controversial theories about how the pyramids of Egypt were built, but the accepted conventional theory of copper chisels and stone or wooden hammers simply does not hold up because such technology cannot reproduce the results we see. Further, because this answer does not suffice, it invites nonconvenfional solutions. Yet these are not heard by the general public, who know of only the conventional theories that all children are taught in school and that audiences see on the Discovery Channel and on PBS when the manufacturing methods of the ancient Egyptians are discussed. On such programs, copper chisels and stone pounders, crude as they may be, are not posited as a possible method of manufacturing; their existence in the archaeological record is presented as proof that such tools were used to produce the monumental megaliths that dot the Egyptian landscape. Obelisks are a prime example of what such a crude technology was supposed to have achieved.
>
> It is important to give as accurate a description as possible of the characteristics of the sunken reliefs in Egyptian obelisks in order to judge whether modern attempts to show how they were created satisfy the evidence. For instance, in the PBS Nova documentary Secrets of Lost Empires: Obelisk, Roger Hopkins, a stonemason who participated in the making of this commentary as a consultant and expert witness, discusses the reliefs with Egyptologist Mark

> Lehner "Even with modern tools, and you know, diamond wheels and all that, we would have, you know, we would have a tough time getting it to this kind of perfection."
>
> Not deterred by Hopkin's expert opinion, Mark Lehner picks up a dolerite pounder and demonstrates his theory of how the ancient Egyptains roughed out big hieroglyphs using it. After pounding for an hour he sincerely declares: "I'm convinced that with their skill their rapport with the stone and a great deal of time and patience, that this is the way they carved the fine details like the hieroglyphs on the obelisk."
>
> …To his credit, Lehner admits that his efforts fell short of the quality of the ancient work on the simplest of shapes: the symbol for Ra, or the sun. His efforts produced a very shallow and rough relief compared to the original smooth, perfect profiles that are incised almost 1 inch deep. If he had managed to sink a perfectly formed falcon with narrow cuts of 0.14 inch wide, he might be able to argue that… [this] is an accurate representation of how the ancient Egyptians may have performed such intricate carvings.[3]

Dunn then turns his attention to the excavation of the unfinished obelisk in Aswan. This massive piece of red granite, similar to the rhyolite that is found at the Ollantaytambo quarry, weighs (if it had been extracted) an estimated 1,168 tons. Dunn discusses the supposed reason for the abandoning of the work on the obelisk: a crack was discovered in the rock during the quarrying, and therefore all work came to a halt. But Dunn wonders why so much effort would be expended on this gigantic block of granite and then suddenly halt—much like the work at the quarry at Ollantaytambo. He says that the obelisk could have been cut into smaller blocks to be used for statues or into larger building blocks, but this was never done. Says Dunn:

> Why the obelisk was abandoned will probably always be a mystery. There are no records that tell us that the quarry workers expended an enormous amount of resources on the granite and found a crack, so they picked up their tools and went to hammer somewhere else. We could speculate that all work ended while the obelisk was being excavated because of a cataclysmic event that that disrupted the Egyptian civilization. All quarrying ended at Aswan and elsewhere, and it wasn't taken up again until the Romans controlled the country in the first century BCE. In fact, the unfinished obelisk may be the last artifact to be

> quarried in ancient Egypt, and as such, it would represent the state of the art in quarrying and moving large objects—notwithstanding the fact that it was not moved.[3]

Dunn says that he noticed that the unfinished obelisk had a deep trench, with unusual circular grooves visible in the trench, where the granite was removed around the obelisk. What he noted were vertical cuts into the rock with horizontal striations on the vertical cuts. This he ultimately surmised was the work of a drilling machine with an abrasive belt and drill that was a "megamachine" that plunged into the bedrock, cutting into it and removing rock. It would be constantly pulled out of the trench and reinserted into the rock, either to make the current hole deeper or to begin a new cut in the rock. This megamachine was a powered tool that was as advanced as anything we have today, Dunn claims, and something like it must have been used in the excavation of the obelisk.

Curiously, Protzen says that work marks at the Ollantaytambo quarry are very similar to work marks that are found at the unfinished obelisk in Egypt. Were both made with the megamachines described by Dunn? Says Protzen:

> The work marks on the largest blocks of coarse-grained rhyolite are intriguing. They are found in three distinct patterns: roughly circular contiguous cups; approximately square-shaped adjoining pans; and adjacent parallel troughs. The cups are from 15 to 25 centimeters in diameter; the pans vary from 15 to 30 centimeters in width and 30 to 50 centimeters in length; and the troughs are from 15 to 50 centimeters wide. Cups, pans, and troughs are about 2 to 5 centimeters deep. Many of the large blocks in the quarries have a residual bulge along one or more of the bottom edges. The work marks stop at these bulges, which project from 10 to 30 centimeters.
>
> The stone cutting marks at *Kachiqhata* recall those found on the unfinished obelisk at Aswan. The Incas' cutting technique must not have been very different from the one used by the early Egyptians, who pounded away at the workpiece with balls of dolerite until it had the desired shape. Indeed, the Inca quarrymen and stonemasons did use hammerstones to cut and dress their building blocks. The cups, pans, and troughs were the result of pounding or pecking at the workpiece with other stones. Working one's way down a block's face, one reached a point close to the bottom edge, where there was not enough room left between the bottom edge and the ground to

> pound effectively on the workpiece. Here, the stonecutter stopped, leaving a residual bulge. This bulge could be removed only if the workpiece was raised or turned over. On some blocks—for example, blocks 5 and 8 in the southern quarry—the bulge is indeed found at the top of the block. Since these blocks also bear work marks on their underside, it is reasonable to assume they were turned over for further work.[50]

It is extremely interesting that the marks at the *Kachiqhata* quarry are admitted to be very similar to those at Aswan. This telltale scooping and the cup marks that we can see are marks that Christopher Dunn thinks were made with a megamachine that was drilling into the rock. Protzen sees these cup and scoop marks as evidence of continued pounding and pounding with a stone hammer (usually a ball of rock about the size of a baseball) against the rock. He also says that the giant blocks of stone needed to be "turned over" so the ridges at the bottom of the block could be hammered away.

A stone in one Fancy Terraces.

Yet, turning these blocks over seems to be a feat that may have been beyond the technology of the Incas. Since these blocks can weigh over 100 tons, one

might think that it would be necessary to use levers to turn these blocks over. Yet, Protzen has concluded that levers were not used by the Incas (or whoever was moving the blocks). How then was this done? Protzen gives no explanation. Indeed, it would seem impossible that levers were not used in turning over the blocks, which had to have been done. Why did they not use them in the arduous task of hauling the blocks, which Protzen knows would have been incredibly laborious, with over a thousand people pulling on special harnesses to move the block even a few meters? It is a strange mixture of crude and semi-advanced technology, all of which would require a tremendous amount of energy, manpower and man-hours of labor. Yet, he still cannot figure it all out, even where all of these people stood on the small plaza at the fortress. It is all quite baffling and some things will just have to be left unexplained, he says.

The Fancy Terrace Walls that Defy One's Imagination

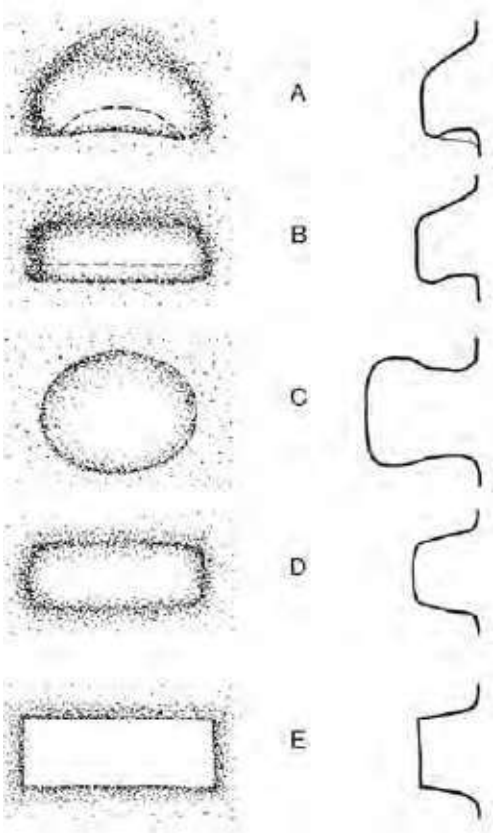
Back at the plaza in Ollantaytambo, Steve, Jennifer and I sat at a restaurant and ordered food and drinks. It had been an exciting day and we were glad to be back in town where we could enjoy some beers and a hot meal. In the twilight after dinner we walked back to the area of the ruins and looked up at the perfectly fitting stones that comprise the so-called "Fancy Terrace" walls that cling to the cliff face on the left that is below the Sun Temple plaza.

Here you can see very fine, thin megalithic blocks fitted together in the jigsaw pattern that form some small terraces going up the face of the cliff, which is quite steep. These Fancy Terraces are very finely made but seem to have no real purpose but to show off the incredible abilities of the stonemasons. Protzen says in one of the last chapters of his book, "Still, how some of the Fancy Terrace walls were built, literally glued to the cliff as they are, defies one's imagination." Indeed these subtle blocks clinging to the cliff are quite incredible, but are hardly noticed by most visitors who, naturally, want to see the larger stones at the "Sun Temple plaza" above this cliff.

The construction of these walls at this mysterious site is the final mystery of Ollantaytambo, and Protzen discusses the various gouges, bosses, and grooves that are part of the various giant blocks to be found at the site. The scooped out gouges, perfect sockets for a beam of wood to help hold a block in place—perhaps a half melted one—are found at Ollantaytambo as they are at Sacsayhuaman, where quite a few of them can be seen.

More interesting perhaps are the bosses, the bumps that stick out from these gigantic hewn blocks—either in a circular, oval, or rectangular shape—that form projections from the stones. Protzen is sure the protruberances (bosses) are

specifically made for the handling of the blocks, but he cannot figure how they were used. Says he:



Protzen's drawings of the different bosses that can be found at Ollantaytambo.

> How were the building blocks handled and lifted? The variety of protuberances or bosses, gouges and grooves carved on the faces of blocks undoubtedly had a significant role in their handling. The protuberances on blocks in situ are typically found near their lower edge. All loose blocks around the site that have bosses have them on only one side, presumably their front. Yet the blocks forming the jambs of the Unfinished Gate have protuberances on their front as well as their back side. The bosses come in several sizes and shapes. As a general rule, the larger the block, the larger the protuberances. They project from only 4 centimeters on smaller blocks to 25 centimeters on larger ones, and vary from 4 to 80 centimeters in width. Although no two bosses are exactly alike, it is possible to classify them into five distinct categories: A, B, C, D, and E. Bosses of type A seem well suited for the application of levers. The indentation on their underside will hold a lever in place and not let it

escape to one side or the other. Type C, which resembles a saddle knob, is particularly convenient for casting a rope around. A lever could be applied to it only if the lever were used parallel to the face of the stone. Type B could serve either function: the groove on its underside could hold a lever or a rope. I am not clear about the uses of type D and E. Is D only a weathered form of B, or did it aid in a special purpose? Type E differs from other protrusions in that it turns up either as a long bar extending over the entire length of the blocks on which it is found, or as a massive rectangular projection.

The bar on loose block 2 at the Fortress has four indentations on its underside that are similar to those on type A protrusions. The indentations are very smooth and seem to be covered with a yellowish coating. Is the coating a residue of sap that oozed from wooden poles or levers set into the indentations? Since block 2 was never completely roughed out and has never been set in a wall, it is difficult to understand in what ways the bar may have helped to manipulate the block. A comparison of the bar on block 2 with that on block 4 in the second wall also leaves one without clues, since the bar on block 4 has no comparable details. The latter bar may have been used to hold the block in a tilted position while the bedding joint was prepared and fitted. The massive rectangular projections on block 2 in the northeast wall or on block 6 in the southwest wall of the Sun Temple most likely had nothing to do with the manipulation of the blocks, but might have been left for the later carving of sculptural or decorative elements.

Gouges and grooves cut into the sides of blocks probably fulfilled a function similar to those of the protuberances.

Grooves and gouges may have held ropes in place while lifting or pulling a block. With levers engaged in gouges cut into the bottom edges of a stone, Inca stonemasons could have nudged it gently into its intended place. The purpose of the sundry cuplike depressions cut along the edges of many green, strongly altered andesite blocks is more elusive; there is no simple explanation for their use.

The protuberances were cut at the construction site and were specifically for the purpose of handling the blocks there. Since none of the blocks abandoned along the transport routes have protuberances, it would seem that the projections had no role in bringing the blocks to the construction site. The same holds true for

> gouges and grooves. If the protuberances, gouges, and grooves are suggestive of their use, they do not imply any obvious hypothesis about how the blocks were moved around the site or lifted onto the wall. Block 1 rests on what could be interpreted as an inclined plane, a device that could have been used to raise building blocks into position. Unfortunately, this inclined plane is an isolated instance, which could equally well be interpreted as a working platform.
>
> … It is not likely that the Inca builders made extensive use of embankments at the Fortress of Ollantaytambo. The terrain is unfavorable, and around most structures of cut stone, there is not sufficient room to build an embankment. Since most walls at the Fortress are retaining walls—even the back wall of the Enclosure of the Ten Niches is a retaining wall—it is more likely that as the wall grew in height, it was backfilled and that the platform thus created served to bring the blocks to the structure and to lower rather than hoist them into place. Still, how some of the Fancy Terrace walls were built, literally glued to the cliff as they are, defies one's imagination.[50]

So, Protzen is very interested in the gouges, bosses and grooves but can't really figure them out. Compounding the problem, although he does not mention this, is the fact that the gouges and protuberances are not found on every block, but are seemingly random. They were not used for the transportation of the blocks, he concludes, and with some of the bosses, he cannot see what practical function they would have had in lifting or holding a block in place. He concludes that they must be decorative, for the later carving of crosses, serpents, lizards and such on the finished block now in place on the wall. And, most interesting of all, he finds that the perfectly cut megalithic facing found on the Fancy Terraces "defies one's imagination." These Fancy Terraces, which can also be found at Machu Picchu on the steep cliffs surrounding that city, are not noticed much by tourists who are busy looking at the giant walls and terraces that are just as amazing. These Fancy Terraces are found at the areas of Ollantaytambo and Machu Picchu which are the most sheer—often literal cliffs—and as Protzen says, seem to be "glued" to the rock face. How workers could have gotten to some of these places, and then raised and lowered blocks until they fit perfectly, is something no one can figure out.

In the Spanish-language book *Etnohistoria Y Tecnologia Inka*

Ollantaytambo,[61] by David Canal Onton, the author, who mainly discusses agricultural techniques and the uses of the terraces, gives a few pages to the moving and raising of the megaliths. He subscribes to the mainstream theories of the blocks being dragged and levered into place with long ropes and wooden poles. He has a photo of an attempt made in 2004 to move a large block of granite that lies in the small plaza in front of the ticket office of the ruins. The photo shows a squared block weighing some 50 to 80 tons wrapped with ropes; men with long poles being used as levers are attempting to push the stone forward, while others are pulling on the ropes in order to drag the stone across the plaza. This attempt met with limited success and mainly went to show how extremely difficult it must have been to move these enormous blocks, much less to stack them up into walls and cut them to perfectly fit against the other stones.

The book, with no comment, also has two drawings of Incas handling large blocks of stone with ropes and levers, but one of the illustrations seems too fantastic to believe: a group of eight Inca stoneworkers are wrapping some ropes around a gigantic block of stone that is sitting on rollers. Two of the workers are sitting on top of the massive stone while another is using a rope to rappel down one side of the stone. The stone has been cut and is so incredibly big that it would seem impossible to be moved at all—it is much larger than any of the stones seen at Ollantaytambo. That the Incas, or anyone, would want to move such a large stone is baffling—it is not done by us today.

The more we study Ollantaytambo the more mysterious it becomes. We realize now that we cannot explain how the stones were moved, or cut and put into place. Also, we do not really know what Ollantaytambo was built for. Was it built as a fortress as Protzen suggests? Or was it built as a Sun Temple and cult center for ancient priests? Was it a storehouse and administrative center for this northern end of the Sacred Valley? Was it perhaps a spaceport for extraterrestrials, or a vimana airport for high tech Sumerians and Indus Valley Hindus of the Rama Empire? The mysterious Cham of Vietnam? Perhaps it was a combination of all these things. Structures on Tonga, Hawaii, Tahiti and Easter Island were also tied somehow into this great mystery of megaliths and mystery builders.

Still, it seems unclear what the builders were attempting to make at the site. Certainly, parts of it are impressive with walls of stone that are huge, perfectly fitted together and nearly indestructible. But other stones are lying about as if they were pulled down or never put into place. What would the finished structure have looked like and what would have been its function? Would there have been a large building with windows and a roof? Would it have had a stone ceiling?

Would there have been armories to store weapons to rain down on some enemy that would potentially attack the fortress? Who would this enemy have been, and why would this "fortress" have made any difference in any attack or battle?

The plaza at the "Sun Temple" area of the fortress is too tiny to hold even the smallest army, and Protzen cannot figure out where over a thousand workers would have stood while dragging the large blocks up to it. While it was built on a cliff-sided mountain ridge similar to where many easily-defended bastions are located, it seems that where the giant blocks were placed would not have been a very effective army base. It could, however, have served to control movement into the town coming from the north, like a toll station that inspected goods or extracted taxes. But why use such gigantic blocks of stone and superhuman effort to build an unfinished tax office? Does it conceal an underground chamber or tunnel that begins at the famous wall?

If one looks at Ollantaytambo as a fortress, as many archeologists do, then it would be fair to compare it to Machu Picchu, also an impressive megalithic city built on a steep mountain ridge. Is that a fortress as well? Against whom was the fortress meant to guard? Hostile tribes coming up from the lower jungles of the Urubamba and the Amazon?

Was Ollantaytambo a control post and tax collection point for travelers coming into this section of the Sacred Valley? Was it a control building for some sort of airport that was located below the plaza along the river? Perhaps Machu Picchu was also a vimana landing pad with its large central plaza, much like Sacsayhuaman's. These large, flat fields are perfect landing locations for helicopters or airships, even today. We will discuss Machu Picchu at length in the next chapter.

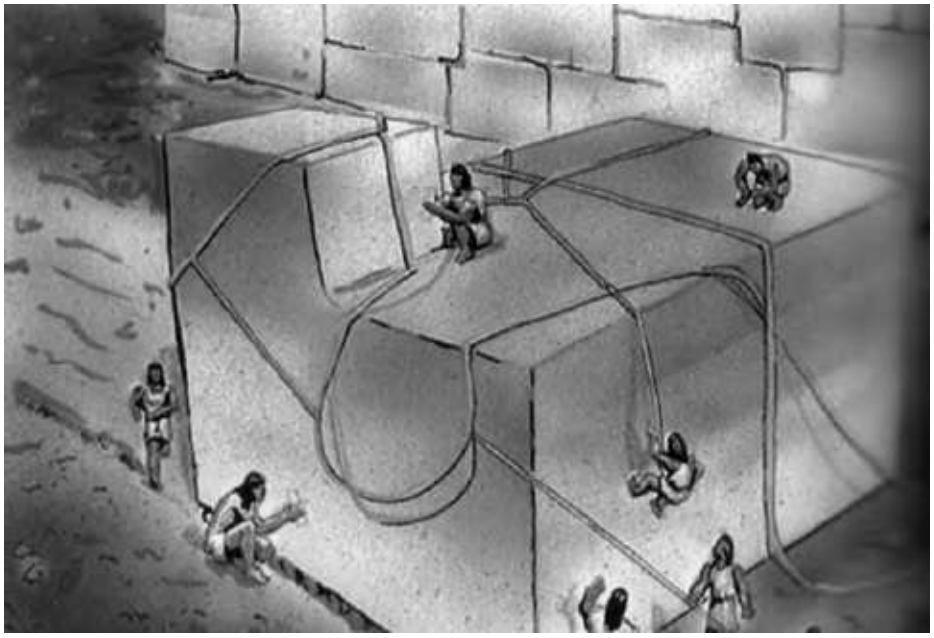
Whatever the structure was meant to be that we call the "fortress" of Ollantaytambo, it was meant to last for thousands of years. No matter how old the fortress is right now, it will probably be standing there for another thousand years or more, just like similar monuments in Egypt and elsewhere. Colossal blocks of granite are dressed, stacked up and ready for a journey to eternity. Even the most modern construction company in Cuzco would not attempt to move them. Though made to last forever, we may never know what the construction at Ollantaytambo was ultimately intended to be.

As we walked away from the cliffs beneath the fortress I looked to my right. There was the road—an ancient road, a dead road—that led downhill to the "lazy stone" that lay at the base of the ramp to the Sun Temple plaza. What could we learn from these dead roads— roads that were lost to the memory of time? The sun was now set. The stones were silent, as ever.

A photo of the 2004 effort to move a large stone at Ollantaytambo with ropes and levers.

An illustration from the book book *Etnohistoria Y Tecnologia Inka*

Ollantaytambo.



An illustration from the book book *Etnohistoria Y Tecnologia Inka OUantaytambo.*

Massive blocks on the megalithic side of OUantaytambo used in later construction with crude stones used as fill.

Urban Area
Upper
Lower
Agricultural area
Upper
Machu Picchu
Entrance

CHAPTER EIGHT

DID THE INCAS BUILD MACHU PICCHU?

What concerns me is not the way things are,
but rather the way people think things are.
-Epictetus (55-135 AD)

The World Explorers group on our 2011 trip spent a few days in Ollantaytambo. Arriving one evening, we strolled around the ancient streets of town, viewing the stonework. We had dinner at a restaurant near the ruins serving traditional Peruvian fare. We spent the whole next day exploring the ruins, and took a walk down to a couple of the "lazy stones" that had almost made it all the way, but still sit today below the ruins. The next morning we walked down to the Ollantaytambo train station and caught the tourist train to Machu Picchu. The train came from the new station above Cuzco, and Ollantaytambo was its first stop. We climbed aboard, showing our tickets to the conductor who guided us to our seats.

As I settled into my seat and got out some reading material for the trip, a shiver of excitement shot up my spine. I had made the trip over 20 times starting in the mid-80s, but it was always an exciting journey to Machu Picchu on the train. Knowing that the majesty and wonder that is Machu Picchu is coming up soon heightens the thrill. Not everyone has made the complete journey once they got on the train: the track was blown up once by the Sendero Luminoso revolutionaries, and landslides from flooding have taken sections of the track out from time to time.

The classic view of the megalithic city of Machu Picchu.

The train got moving again right away and we looked out the windows at the green terraced fields that start to narrow at this northern end of the Sacred Valley. Eventually, the train will descend beyond the valley and into the Urubamba Gorge that leads to mountain jungles, the town of Aguas Calientes (Hot Waters), and the mountaintop city called Machu Picchu.

As has happened on a number of train trips in the past, our group fell into a discussion about whether the Incas or some earlier culture built Machu Picchu. Most of today's archaeologists will insist that that the Incas were the builders of Machu Picchu. But, some less mainstream archeologists will say that Machu Picchu, and other megalithic monuments in the Andes, are pre-Inca. Certainly, the Incas inhabited these grand buildings, as they are virtually indestructible. Even today in Cuzco, where many megalithic buildings still survive, the descendants of the Spanish colonizers are living in these buildings (and many have been turned into convents, churches, restaurants and even hotels)—but these Spanish occupiers did not build these buildings. They were already standing for hundreds of years before the Spanish took them over and they're still standing now, 500 years later. Were they already standing when the Incas occupied them?

Probably the best way to start our argument is to quickly review some the basic "facts" about the Incas and what little we know of their history. The Incas

are a relatively recent political power in the many thousands of years of South American history, and at the time of the Spanish conquest they were the rulers of the largest native empire of the Americas.

Mainstream historians say that around the middle of the 15th century the empire began to expand from its initial base in the Cuzco region. It ended abruptly with the Spanish invasion led by Francisco Pizarro in 1532. At the time of its demise the empire controlled an estimated 12 million people in much of what is now Peru and Ecuador as well as in large parts of Chile, Bolivia and Argentina. But, strangely, this huge empire is said to have only begun a few generations before the arrival of the Spanish. What is more, all of the megalithic monuments of the Sacred Valley were built within a period of less than one hundred years ending in 1532. While the Egyptians had literally thousands of years to create their enduring monuments of colossal stone, the Incas managed to do it in a very short time period indeed—according to mainstream archeologists.

The Inca Empire in Mainstream Archaeology

The first Inca is said to have been Manco Capac. According to the standard legend, he appeared with his brother, his brother's wife and his own wife on the Island of the Sun in Lake Titicaca. He declared himself sent by God to rule the peoples of the Andes. He set up his capital at Cuzco and founded the Inca dynasty. It is generally assumed by historians that the wonderful city of Cuzco was built starting at this time. As we have already seen, it is far more likely that most of the city of Cuzco, and Sacsayhuaman, the megalithic fortress above Cuzco, were already in existence before the Incas.

The *Grolier Encyclopedia*, quoting standard texts on the Incas, says the empire started out small:

> The Incan empire probably started out as a small kingdom, similar to many others in the Andes during the 14th century. A powerful state centered at Huari, in the vicinity of what is now Ayacucho, Peru, and well to the north of Cuzco, had apparently controlled the area several centuries earlier, but by the 10th century small feuding kingdoms dominated the scene. The reasons for the Incas' earliest triumphs over their neighbors are impossible to discern from existing sources. It is not known for certain whether Manco Capac, listed as the founding ruler, was a historical personage.

There are said to have been 13 kings before the Inca Atahualpa, who was

ruling at the time of the conquest. Each of these kings was mummified upon his death and then covered in gold leaf. The mummies of these former emperors were kept in the Qoricancha at Cuzco until the time of the conquest, when they disappeared.

The Inca Pachacutec Yupanqui (reigned c.1438-1471) was the ruler responsible for most of the Inca expansion into an empire. Many of the megalithic monuments around Cuzco and the Sacred Valley are said to have been built by him. Pachacutec is generally acknowledged to have been a great strategist and organizer, expanding the empire far and wide from Cuzco. During the final stage of his rule, Pachacutec's son, Topa Inca, assisted his father in the conquest of further territory, mainly to the north. The Incas captured the older and formerly powerful Chimu kingdom in the north in about the year 1470.

After the death of his father, Topa Inca (r. 1471-93) continued to expand the empire into present-day Ecuador. During Topa Inca's reign the south coast of Peru as far as present-day northern Chile was conquered (around 1476). The Incas also expanded south on the Bolivian plateau into present-day northern Argentina. Rebellions sprang up periodically among those who had been conquered, as not everyone was thrilled to be a subject of the newly expanded Inca Empire.

Topa Inca was succeeded by his son Huayna Capac (r. 1493-1527). Huayna Capac was ruling the empire from his northern outpost in Quito at the time of his death in 1527, busily expanding the empire into present-day Colombia. His death plunged the Inca state into civil war between two of his sons. Atahualpa, the younger brother who was with Huayna Capac at the time of his death, claimed that his father wanted to divide the kingdom and set up a new northern capital at Quito that would be the headquarters of his part of the kingdom. However, his older brother Huascar, who was in Cuzco, would not have the empire divided into two, and a bloody civil war began. Atahualpa had finally won this war in a decisive battle and was traveling between Quito and Cuzco in 1532 when Pizarra and his small band of soldiers arrived. Atahualpa welcomed the conquistadors to his camp at the local town of Cajamarca, but suddenly the Spaniards took Atahualpa captive and the collapse of the Inca empire began.

But can we believe this mainstream account? The big question that concerns us is this: Were the astonishing megalithic structures in the vicinity of Cuzco and the Sacred Valley all built by the Incas just prior to the arrival of the Spanish, or were many of the structures (if not all of them) already in existence before the Incas?

The Megalithic City of Machu Picchu

Machu Picchu is a megalithic city 2,400 meters (7,875 feet) above sea level on the eastern slopes of the Andes looking down on a bend of the Urubamba River, north of Ollantaytambo and the Sacred Valley. Built on a high precipice between steep mountain peaks commanding spectacular views, it has become one of the most famous and recognized archaeological monuments in the world. After the Spanish conquest the site was abandoned and became covered with dense vegetation. Except for a few local farmers in the remote area, no one seemed to know about the city until it was rediscovered and promoted in 1911 by Hiram Bingham, a Yale historian who specialized in South American history.

Machu Picchu combines fine stone buildings, some of them megalithic, with agricultural terraces that cascade up and down the steep slopes of the city. This makes Machu Picchu appear to be virtually carved out of the mountainside, and with the addition of the terraces on the cliff side of the city, it is sometimes difficult to figure out where man-made Machu Picchu ends and the natural mountain begins. Tourists are never disappointed by a visit to Machu Picchu.

Old photo of Machu Picchu, circa 1911.

At the very top of the central, megalithic portion of the city is a carved natural stone, known as the Intihuatana, which is enclosed by curved walls of perfectly-fitted stones. Trapezoidal windows are seen in these walls and in other megalithic walls below it, the most remarkable being found in the so-called Room of Three Windows that looks out over a large flat plaza in the center of the city.

Machu Picchu is a UNESCO World Heritage site and according to the World Heritage Convention/UNESCO web site (which is written in a strange style):

> Machu Picchu covers 32,500 ha in some of the scenically most attractive mountainous territory of the Peruvian Andes. As the last stronghold of the Incas and of superb architectural and

archaeological importance, Machu Picchu is one of the most important cultural sites in Latin America; the stonework of the site remains as one of the world's great examples of the use of a natural raw material to provide outstanding architecture which is totally appropriate to the surroundings. The surrounding valleys have been cultivated continuously for well over 1,000 years, providing one of the world's greatest examples of a productive man-land relationship; the people living around Machu Picchu continue a way of life which closely resembles that of their Inca ancestors, being based on potatoes, maize and llamas. Machu Picchu also provides a secure habitat for several endangered species, notably the spectacled bear, one of the most interesting species in the area. Others animals include: dwarf brocket, the otter, long-tailed weasel, pampas cat and the vulnerable ocelot, boa, the Andean cock of the rock, and the Andean condor.

The natural vegetation is of humid and very humid lower montane forest of the subtropical region, mainly with genera and ferns of the Cyathea and palms.

Set on the vertiginous site of a granite mountain sculpted by erosion and dominating a meander in the Rio Urubamba, Machu Picchu is a world-renowned archaeological site. The construction of this amazing city, set out according to a very rigorous plan, comprises one of the most spectacular creations of the Inca Empire. It appears to date from the period of the two great Incas, Pachacutec Inca Yupanqui (1438-71) and Tupac Inca Yupanqui (1472-93). The function of this city situated at least 100 km from the capital, Cuzco, has not been formulated which are not verifiable given the absence of written documentation and sufficiently explicit material evidence.

Without making a judgment as to their purpose, several quite individual quarters may be noted in the ruins of Machu Picchu: a quarter 'of the Farmers' near the colossal terraces whose slopes were cultivated and transformed into hanging gardens;an 'industrial' quarter; a 'royal' quarteranda 'religious' quarter. Inca architecture reveals itself here in all of its force with the titanic earthen works which multiplied the platforms, leveled the rocky relief, constructed ramps and stairways and literally sculpted the mountain whose cyclopean constructions appear to be a prolongation of nature. (whc.unesco.org)

Indeed, Machu Picchu seems like the perfect “cyclopean” city perched on a mountaintop with a harmony and beauty that coalesced with the natural surroundings in a breathtaking way. Yet, was it really “the last refuge of the Incas”? Was it even built by the Incas? The people at UNESCO seem pretty sure, but I am not convinced.

Hiram Bingham is Led to Machu Picchu

A Yale professor named Hiram Bingham is generally given credit for discovering Machu Picchu. Born in Honolulu in 1875 to a missionary family, he got a degree from Yale in 1898, and another from the University of California, Berkeley in 1900; in 1905 Bingham got a Ph.D. from Harvard. He went on to become a professor at Harvard and finally a lecturer in South American history at Yale in 1907.

Bingham was fascinated by history and became very knowledgeable about the Incas and the conquest of Peru. He realized that there were a number of mysteries that remained from the early Spanish period, and one of these was the location of the city of Vilcabam-ba, the last Inca capital under Manco Inca, supposedly a new city founded in 1539 in the Vil-cabamba region just north of Machu Picchu. This city fell to the Spaniards in 1572, and was largely forgotten, literally dissolving back into the jungle.

Manco Inca (also known as Manco II) retreated to the megalithic city of Vitcos in the Vil-cabamba region in 1537 after his battles with the Spanish at Sacsayhuaman and Ollantaytambo. Some say that he built this city before moving on to Vil-cabamba, but it is generally believed that the great Inca Pachacutec had constructed this place as a “summer palace” retreat far out in the jungle, away from Cuzco and past the Sacred Valley. (My readers will not be surprised that I think the megalith-ic city was there long before Manco Inca or Pachacutec.)Until his death nearly eight years later, Manco Inca mounted a war against the newly-formed Spanish government from the Vilcabamba area. This remote jungle and mountain area contained at least three cities: Vitcos, Vilcabamba the New, and Vilcabamba the Old. According to Gene Savoy in his highly regarded 1970 book *Antisuyo*,[72] the first Inca, Manco Capac, had arrived in Cuzco from a refuge-cave called Tamputocco which Savoy believed was in the Vilcabamba region. Now Manco II, in his fight against the Spanish, had fled back to Tamputocco:

Hiram Bingham with one of his guides.

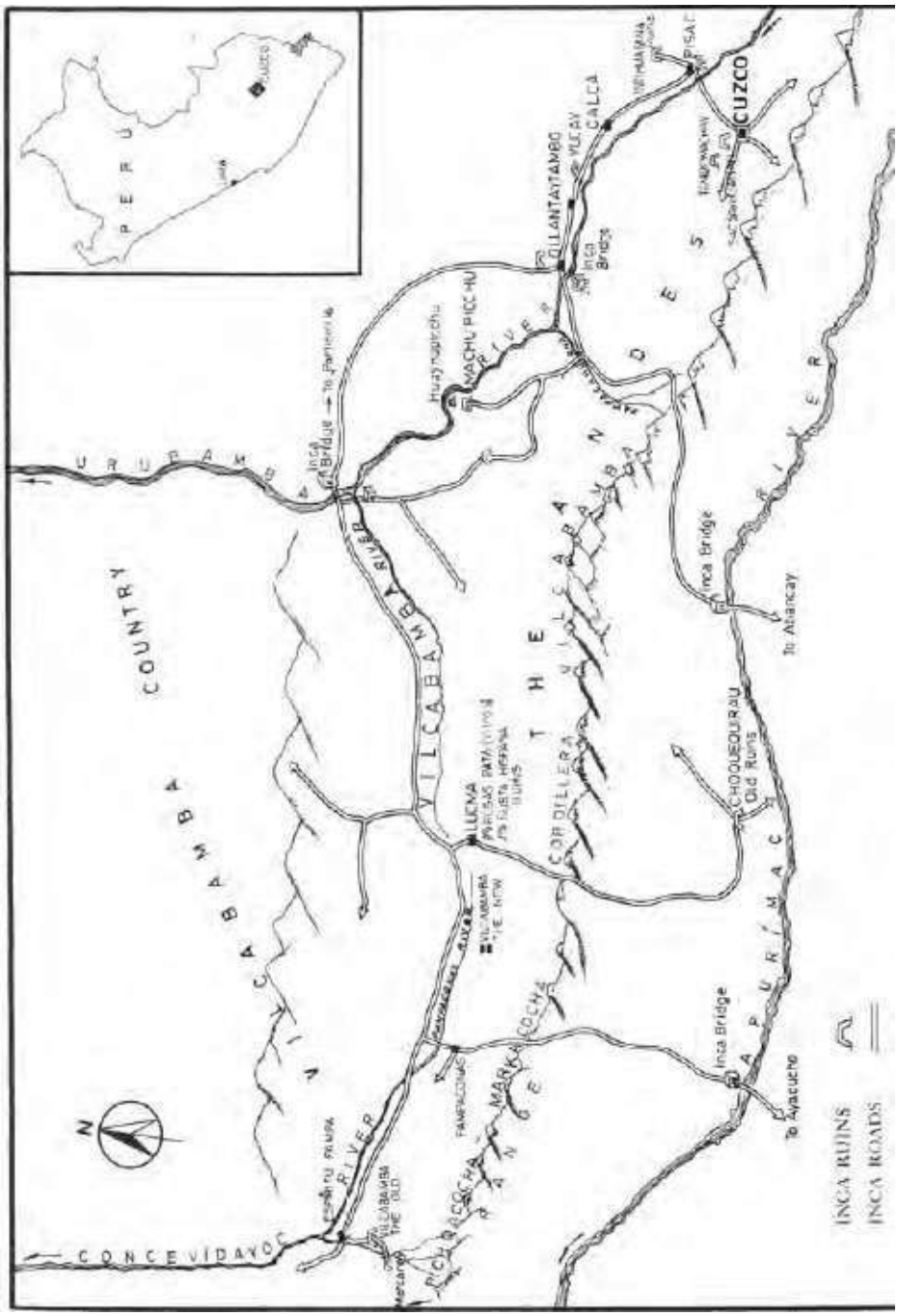
Had Manco II, descendant of the mighty Manco I (Manco Capac) who had originally led his people out of Tamputocco to found the city of Cuzco, imagined himself the leader of a new sacred cause? Was his cry, “back to the place of origin from whence we will rebuild and reconquer”? He may have believed history was being repeated. This is suggested by the religious fervor of his earlier movement. He took pains to remove the golden mummies of his ancestors and took along a large delegation of priests and Virgins of the Sun by which to preserve the solar arts and sciences of Inca civilization. He also retired with the *coya* [matrons of the Inca] and the royal harem to provide for his inheritance.

Was this land of Vilcabamba the Tamputocco of Inca legend, the cave of origin? Hiram Bingham, the Yale University professor, started looking for the “Lost City of the Incas” and chanced upon Machu Picchu northwest of Cuzco. He believed this mountain citadel to be Tamputocco as well as Manco’s Vilcabamba—a hypothesis that has been criticized by scholars. As far as I could tell from my study of Inca mythology, there were three caves of origin, the most prominent being at Pacaricctampu in the province of

Paruru, south of Cuzco. At least four great nomadic tribes were involved over different periods, the earliest of which seems to have originated in the Apurimac-Urubamba watershed.

While I felt that the region between the Apurimac and Urubamba, *i.e.*, the Vitcos-Vilcabamba territory, was more than likely one of the earliest homes of the Incas before their march on Cuzco, it was also probable that greater Antisuyo—that vast region east of the Andes—was the ancient home of many families that grew into the Inca people. If this were true, then the farther east I explored, the more primitive the constructions that would be found. Because Machu Picchu—and other ancient remains found in and around Cuzco—are the result of the classic period of Inca, the stonework being most technical and the result of advanced skills, it had to be ruled out as both an early home and refuge of the Incas.

Old photo of Hiram Bingham and his guides, circa 1911.

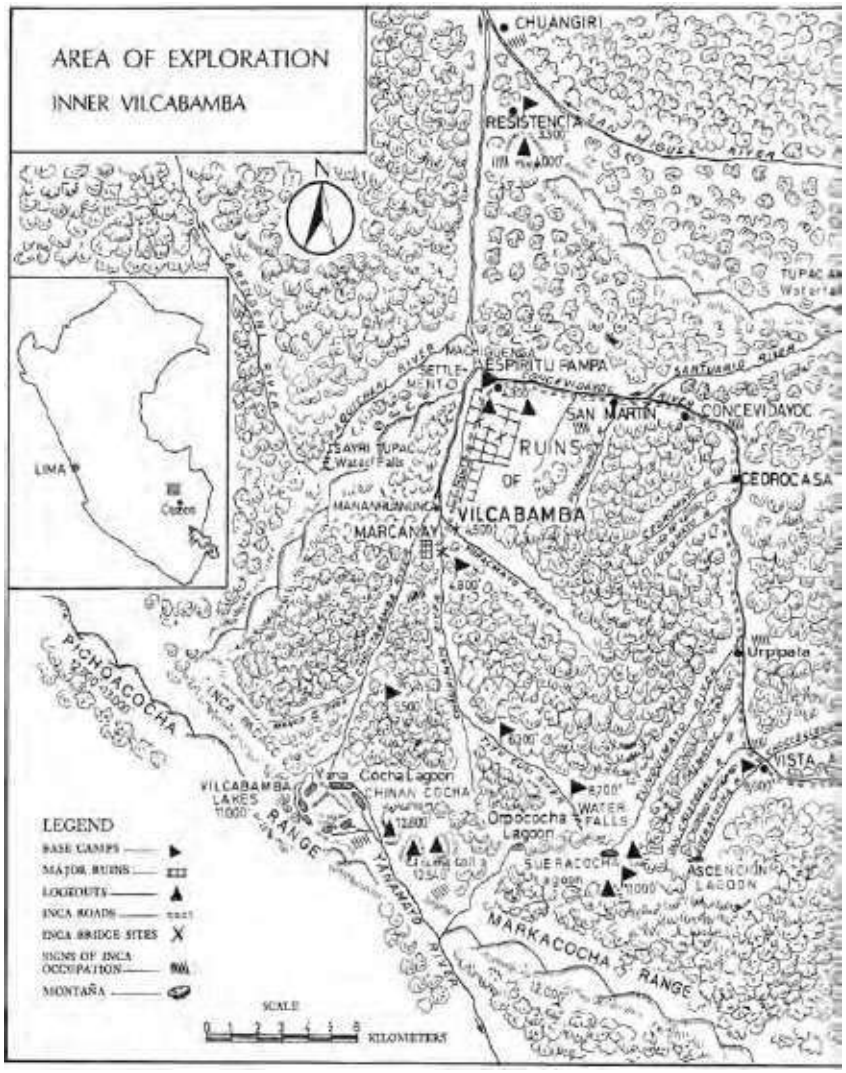


This map, from Gene Savoy's book *Antisuyo*, shows the river systems and ruins in Vilcabamba Country.

Savoy commits what I think is the classic error in archeology: he assumes that the finest, most complex construction dates from the later cultures since the skills would have been accumulated over time. In his case, in his quest for the earliest Inca culture, this assumption causes him to rule out Cuzco and the Sacred Valley as the center for his search, and drives him out to the remote

jungles where he expects to find a deterioration in construction that will confirm that he is reaching the earliest settlements. While it is entirely possible the earliest Incas came from the Antisuyu region, as Savoy theorizes, I think his reasoning vis a vis construction techniques is faulty.

Savoy and Peruvian explorer Antonio Santander Casseli made a number of expeditions into the Vilcambamba region in the 1960s and discovered what they considered the ruins of Vilcabamba the Old in an area known as Espiritu Pampa (Plain of Spirits) in 1964. Savoy considered the eastern area of the Inca empire, known as Antisuyo, to be the cradle of the Incas, and he continued to believe throughout his life that the Incas had originated in the lower jungle areas of Peru. They had come to the cooler mountain areas around Cuzco to found their empire, and then retreated to the jungle when the Spaniards had taken over their country. This would play into the scenario of the final “Lost City of the Incas” which is the still lost, legendary city of Paititi, thought to be in a mountain jungle area east of Cuzco or Lake Titicaca.



Gene Savoy's map of the Vicabamba ruins area from his 1970 book *Antisuyo.*

Gene Savoy’s photo of one of his guides at the Rosas Pata area of Vitcos, circa 1964.

Controversy exists as to whether Paititi is a real place at all — this is where the golden mummies, mentioned by Savoy above, were supposedly taken. And it is debated whether Paititi would be a megalithic city like Machu Picchu, or a poorly built city like Vilcabamba that was probably hastily built after the conquest, but could be an early construction that lacked the fine “Royal Inca” finesse. Vitcos is clearly an earlier city, not built hastily after the conquest. Certain doorways at Vitcos are megalithic and made of well cut and fitted rectangular granite blocks that are obviously of great age. Savoy has a very good photograph of one of his guides at a doorway in the Rosas Pata ruins of Vitcos, and it is clearly megalithic, as well as pulling apart from years of earthquakes and settling. Paititi may well be constructed like this, and such construction takes time as well as advanced tools and skills.

Gene Savoy’s group looking at typical Wari construction at the site of Acque, 1964.

Savoy does not seem to realize that the megalithic cities may be associated with the earlier builders of Tiwanaku and Puma Punku, and completely disregards the legends of Manco Capac originating at Lake Titicaca and the Island of the Sun. His belief that more ancient cities of the Incas would be found in the lower jungle areas of Peru or Bolivia has not been borne out by decades of expeditions into these difficult areas, though the search for the secret city of Paititi continues to this day. Vitcos may be the last megalithic city in the jungle river area of the Urubamba, though I was told once of two gigantic megalithic blocks on either side of the Urubamba below the city of Quillabamba that were apparently part of a bridge. No photos of these gigantic squared blocks have been published, to my knowledge, and they may well be part of a natural formation.

The small, poorly constructed Inca refuge of Vilcabamba was said to have been founded by Manco Inca (Manco II) in 1539, and it became the isolated capital of the Incas in exile. In 1544, Diego de Almagro, who led a group of conquistadors that had split from the Pizarro brothers and were their rivals, sent two priests as ambassadors to Vilcabamba. Manco Inca welcomed them, and they stayed with him and his entourage for some weeks.

During this time, the two Spanish priests managed to gain the confidence of

Manco Inca and played the popular game of “Sapo” or frog, which is a game of throwing coins or objects into the mouth of a bronze or copper frog. It is said that after several days of drinking alcohol and playing Sapo, Manco Inca suddenly died from overdoing it, an early victim of too much gambling and drinking. Some speculate that he was poisoned by the priests.

Manco Inca had several sons, and was initially succeeded by his son Sayri Tupac. He became the lord of Vilcabamba, but died in 1561, perhaps also from poisoning. He was succeeded by his brother Titu Cusi who died ten years later in 1571. He, in turn, was succeeded by Tupac Amaru, another brother, who became the last Sapa Inca, or emperor (in Quechua, Sapa Inca means “Only Inca”). The Spanish had routinely sent two ambassadors to Vilcabamba to negotiate with the remaining Inca royalty, and when two of these ambassadors were murdered, the Viceroy of Cuzco declared a final war on the Incas. He sent an army out from Cuzco in April of 1572 to attack Vilcabamba. Shortly thereafter, a key bridge on the Urubamba was seized by some Spanish soldiers and the Spanish army assembled at the bridge to invade the Vilcabamba valley. On June 24, 1572, the Spanish army entered Vilcabamba and burned the city.

The Sapa Inca Tupac Amaru had left Vilcabamba the day before and had escaped into the lowland forests. The Spanish followed him and finally captured Tupac Amaru and his pregnant wife near a place called Momori. The captives were brought back to the burnt ruins of Vilcabamba and then on to Cuzco. After a trial for the murder of the two priests who had served as ambassadors for the Spanish, Amaru was hanged in the main square of Cuzco sometime in October of 1572. The Inca dynasty had come to a bitter end. Vilcabamba became lost to history and its location became a mystery. Hiram Bingham began his search for Vilcabamba in 1907 but found Machu Picchu instead, something that was to confuse archeologists and historians for decades. Note that even today, the UNESCO web site describes Machu Picchu as “the last refuge of the Incas,” which designation properly belongs to Vilcabamba.

Tupac Hiram Bingham, circa 1911.

Old photo of Machu Picchu, circa 1911.

In his early explorations, Hiram Bingham had visited Espíritu Pampa and the actual sites of Vitcos and Vilcabamba, but once he had been shown Machu Picchu he was convinced that this magnificent city was the Vilcabamba he was looking for; he continued to maintain this until his death in 1933. Bingham made his “discovery” of Machu Picchu on July 24, 1911 with his guide Melchor Arteaga, when a local boy named Pablito Alvarez, only 11-years old, led them up the steep hill to the citadel.

Back at Yale, where Bingham was a lecturer on South American history (he was not a trained archeologist, but rather a historian), he promoted the discovery of Machu Picchu. He returned to the site in 1912 and 1915 with the support of

Yale and the National Geographic Society. Machu Picchu became famous around the world when National Geographic devoted its entire April 1913 issue to Machu Picchu. Bingham wrote a book, *Lost City of the Incas*, which was published in 1922 in which he theorized that Machu Picchu was Vilcabamba and the traditional birthplace for the "Virgins of the Sun." Today, the road that switchbacks from the river up the hill to the entrance of Machu Picchu is known as the Hiram Bingham Highway.

An estimated 40,000 artifacts, including gold pieces, ceramics and mummies, were removed from Machu Picchu and taken to Yale where they still reside today, although in 2007 an agreement was made between Yale and the Peruvian government for the return of the objects.

Was Machu Picchu Actually Discvovered in 1867?

A number of other people have been identified as having seen Machu Picchu before Hiram Bingham "discovered" it in 1911. The list includes two local missionaries named Thomas Payne and Stuart McNairn, who were said to have climbed to the ruins in 1906. A German engineer named J. M. von Hassel was also said to have seen the city. Also, the Cusco explorers Enrique Palma, Gabino Sanchez and Augustin Lizarraga are said to have arrived at the site in 1901.

However, Machu Picchu appears on maps published in 1865 and 1874. In 1867, a German man bought land around Aguas Calientes, on the Urubamba River opposite Machu Picchu, and apparently tried to exploit the ruins.

The *Peruvian Times* published an article on August 25, 2011 concerning the occupation and exploitation of Machu Picchu, starting around 1867, by a German explorer/entrepreneur named Augusto R. Berns. Berns, after buying land around Aguas Calientes to run a sawmill, became aware of the astonishing city on top of a mountain nearby. He made a number of trips to Machu Picchu, naming the city after the mountain. Its original Quechua/Inca name is not known, a mystery in itself, as one would think that such a wonderful city would have been the subject of many famous stories and legends.

Old mapwith Machu Picchu on it, 1865.

Old mapwith Machu Picchu on it, 1874.

Berns apparently got permission from the Peruvian Government in the 1880s to “excavate” in the vicinity of Machu Picchu in return for a 10% cut on any precious metals that were found. If there were golden treasures and sun disks at Machu Picchu, their looting had begun.

The rare map of Machu Picchu from 1874 comes from a local book, published in 1877, that contains the map and refers to the “forts of Chuquillusca, Torontoy and Picchu.” This last fort would seem to be a reference to Machu Picchu, being the last in a series of forts along the high mountain ridge that ends at the big hairpin bend of the Urubamba River.

A map that included Machu Picchu and its neighboring peak Huayna Picchu was published in Italy by the Italian Geographer Antonio Raimondi in 1865. In 1875 Berns showed the French travel writer-historian Charles Wiener the ruins. Wiener’s subsequent book, published in Paris in 1880, included a map that featured the peaks of “Matchopicchu” and “Huaynapicchu.”

Augusto Berns was the owner of the property where some of these mapmakers and explorers were coming. They would stay at Berns’ hacienda in

Aguas Calientes and he would, apparently, show them gold and silver artifacts that they could buy. He claimed that this was a land of gold mines, and that there was placer gold in the rivers to be panned. He called his land at Aguas Calientes "Llamacansha," which he told visitors translated as "Gold Yard" from Que-chua, but it actually means "Llama Yard." On early maps it was designated as "Saw Mill" and later called "Maquina," or machine, referring to the giant saw that he had brought to the ranch. Berns had originally hoped to make railroad ties for the train that had been proposed, but that market did not materialize for him. The train from Cuzco and Ollantaytambo did not reach Aguas Calientes until 1928.[71]

Detail of the 1874 map.

The Intihuatana Stone located at a high spot in the Main Temple.

After living in Peru for at least eight years, Berns traveled to the USA,

possibly using money from the sale of gold artifacts in Lima. After some years, Berns launched a land scheme out of Detroit, Michigan, to develop his property in the Urubamba River valley, opposite Machu Picchu. He said the area, which actually borders on the tropical jungle, resembled “the south of France more than any other” place on earth. By 1881 he was advertising the property in newspaper articles and adverts.

Berns gave this property the curious official name of “Torontoy or Cercada de San Antonio Estate in Southern Peru.” In his advertising, he said it was an 8-by-18 square-mile section of the (rather difficult to reach) valley. Not only was it like southern France, but it also contained a stairway and paved road that ascended to certain ruins, which Berns extravagantly called “The Towns of the Gold and Silver Smiths of the Andes.” Berns’ scheme to get investors to invest in his “lost city of gold” and surrounding mining rights has come to be known as the Torontoy scheme. Indeed, in a way, this is an early name for Machu Picchu, a city whose real name in Quechua, or whatever language, is unknown. One would think that the complex on top of Machu Picchu originally had a Sumerian name, like Tiwanaku, and was built by these same people.

Berns said in his 1881 prospectus that he would sell the entire estate for $55,000, which would barely pay off his former partners— early investors shall we say—though he wanted to receive an additional $5,000 a year (about $50,000 in today’s money) and yet another $5,000 a year for travel expenses as “traveling is extremely expensive in Peru.” Indeed, it does seem that traveling from the USA to Peru by ship, and then to Cuzco and beyond could be rather expensive in those days. It would still seem that Berns was being excessive—he was selling a gold mine that he had not actually discovered and a lost city that he did not actually own.

Owning a gold mine, in Peru or anywhere, can be a dream come true, or a terrible headache and waste of money. Berns, who was an adventurer and probabaly initially came to the area on a search for gold, had found something almost as good—a lost city of astonishing craft and beauty. The only problem was, it was not a city of gold; excavations done from 1911 to 1915 unearthed mainly pottery, with some silver statues and jewelry. Berns actually did have access to Machu Picchu through his agreement with the Peruvian government, and excavations of burials in the city would have provided Berns and others with some gold and other artifacts, just not the kind of wealth Berns was promising. In fact, prospective investors in Berns’ Torontoy scheme were probably the very first tourists to visit Machu Picchu, being shown the site to prove to them that Berns did have access to this fabulous lost city—presumably rich in gold.

Old photo of man and boy at the Intihuatana Stone.

A view of the megalifhic Room of Three Windows at Machu Picchu.

History has forgotten Berns and his Torontoy scheme. No one knows what happened to him and it is unknown if he ever got any investors for his gold property along the Urubamba. He may never have made it back to Peru, and perhaps he got involved in other land schemes, probably ones in the USA, a country far easier to live in than Peru. Berns may have become that familiar man with some pretty fantastic tales to tell his fellow drinkers at the local pub or club —tales of lost cities, gold treasure and fabulous mountain vistas from a secret spot that he had been to many times and would never forget. Why, he could take anyone who cared to go right to the spot—but travel to Peru and the lost city would cost quite a bit of money, and it was money that he just could not raise. At that time, it would be the equivalent of many thousands of dollars to make the journey to Lima, Cuzco and the Urubamba Valley.

A Secret City in the Andes

As I walked up the granite stairs of Machu Picchu towards the great plaza just below the main temple and the Intihuayna—the "Hitching Post of the Sun"—I wondered about those early visitors to Machu Picchu, Berns and Bingham and others, and the astonishment that they must have felt when they got to the top of the mountain and could see the vistas available to residents of this secret city. It was a city that commanded the big bend in the Urubamba and was a lookout for any movement in the valley below. Indeed, it seems clear that Machu Picchu—whatever the name of this fortress—was situated in such a way as to control access to Ollantaytambo and the Sacred Valley. Cuzco and the Altiplano, with Lake Titicaca and Tiwanaku, lay beyond.

Walking down the plaza, I approached the Main Temple area with its megalithic walls; the stones of one of them are pulling away from each other and leaving a large gap, caused either by the action of earthquakes or gradual settling over the years. I gazed up at the amazing Room of Three Windows, which is an excellent example of megalithic construction. On the far side of the Main Temple are cliffs and small terraces. These are reminiscent of the Fancy Terraces at Ollantaytambo and their incredible walls that Protzen says are "literally glued to the cliff" and whose presence "defies one's imagination."[56]

These tiny terraces are situated along a vertical cliff that makes one dizzy to look down. I carefully sat on the edge of the cliff near the Main Temple and gazed down at the Urubamba River far below the sheer wall of granite that is this western side of Machu Picchu. It was an amazing sight, one of many that made Machu Picchu such a popular tourist destination. Imagining the logistics involved in stonemasons working on these cliffs and "gluing" the slim granite stones in place was mind-boggling. Indeed, Protzen was at a loss to explain it, both here and at Ollantaytambo.

A view of the megalithic wall on the other side of the Room of Three Windows.

A view of the megalithic wall at the Main Temple with its wall pulling apart.

I walked around the site as I had many times before. I avoided crowds of tourists as best I could, and visited the Intihuatana, the “Hitching Post of the Sun,” the “Enigmatic Stone”—a huge monolith of unknown purpose. I visited the round-walled Temple of the Sun, the Room of Three Windows, The Priest’s House, and The Royal Tomb. All were amazing examples of fine stonework in the same manner as seen at Tiwanaku, Puma Punku, Cutimbo, Sillustani, Cuzco and Ollantaytambo. Was Machu Picchu only built circa 1450 by Pachacutec Inca Yupanqui and then abandoned in 1572 during the final battles at Vilcabamba? It seemed incredible that Machu Picchu was not many hundreds of years older than

this, and considering the large lichen patches on the rocks and the cyclopean stonework at the Main Temple and the Room of Three Windows, it would seem that Machu Picchu is as old as Puma Punku and Tiwanaku.

Indeed, it is clear to me that the original builders of Machu Picchu are the same original builders of Cuzco and Ollantaytambo. These builders cut and moved gigantic blocks of stone and then fitted them into walls that would be difficult to duplicate today. While specialists like Jean-Pierre Protzen try to explain the likely process that was used in forming and moving these blocks, he is unable to explain everything, including how the blocks were moved onto small mountain ridges by the presumed thousand-plus men needed to drag the giant stones. Why such builders would be trying to do such a difficult thing anyway, is never discussed, as it is just as baffling as the construction itself.

Certainly, the Incas lived at Machu Picchu, just as they lived in Cuzco, Pisac and Ollantaytambo. The citadel may well have been a special sanctuary and boarding school for the Virgins of the Sun, as suggested by Bingham, although most archeologists tend to discount this today. It is often thought to have been an estate of Pachacutec Inca Yupanqui (sometimes called Pachacuti) who, if this theory is correct, must have built the city in only about 20 years. Other archeologists tend to think that Machu Picchu was a sacred religious site where the geography of the mountains and rivers made it an ideal place to conduct sun ceremonies and “hitch” the sun during the solstices.

I walked up the megalithic stairs to the southern portion of the city where I could get a good look back at Huayna Picchu, the central plaza and the Main Temple area. This was the postcard view of Machu Picchu and one that always looked great, in either rain or shine. In fact, it had rained earlier in the day but the sun was shining now. A rainbow appeared over Huayna Picchu and I gazed at the terraces high up on that steep mountain peak. They were a marvel as well. I had climbed up there a number of times, but today I would not have the time.

Machu Picchu was a mystery of stone on top of a mountain. One thing was certain, it had a commanding view of a big loop of the Urubamba River below its cliffs and steep jungle slopes. As a fortress and lookout post for approaches from the lower jungles to Ollantaytambo and the Sacred Valley, this citadel was ideal. It also seemed to have been built long ago, probably many hundreds of years before the Incas.

From the highest point of Machu Picchu it is possible to see the Machu Picchu Hydroelectric project on the river below. Was there once some sort of ancient “power plant” at Machu Picchu? The large central plaza is big enough to accommodate a helicopter or small airship. In many ways it seems a smaller

version of the plaza in front of the zigzag walls of Sacsayhuaman. Ancient texts in India and Sumeria spoke of flying machines, called vimanas in the Sanskrit texts. Were these plazas landing fields for the ancient vimanas? It was an astounding thought.

I chuckled to myself as I realized that Machu Picchu would probably change with the culture over the years. Guides dutifully spout the names of the buildings and the purpose of Machu Picchu, but we don't really know. UNESCO is careful top point this out. We don't even know the real name of this city, much less who built it. Just as Spanish people are living in ancient buildings in Cuzco that they did not construct, it seems that the Incas lived at Machu Picchu, which they did not build. And today, many modern Peruvians (many of them from Lima) now live at Machu Picchu and work at the site and hotel there. The occupation of this amazing city goes on, and if preserved correctly, it will last for many more hundreds of years.

As the sun was getting low in the sky and the guards at Machu Picchu were doing their best to hustle the final tourists down the stone stairs and back to the hotel and bus station, I put my camera away and caught up with a small group of visitors making their way out of the ancient city. Not surprisingly, I found that most of our World Explorers group were among these final remaining visitors. Like everyone before them, they were impressed by the ancient technology and construction ability of the builders of Machu Picchu. These builders were probably not the Incas, I decided, as I ran my hand along one of the fine stone walls. Like the builders of many of the megaliths in Peru and Bolivia, the builders of Machu Picchu would remain a mystery for now—but they had left a trail to be followed. Would that trail lead back to ancient Sumeria and the Annunaki? It would seem so.

A classic view of the megalithic city of Machu Picchu and the main plaza.

The remains of the megalithic tower at Machu Picchu.

A megalithic door at Machu Picchu with small reonstructed stones above it.

Old print of an Inca stonemason bashing out a block.

Some of the walls and terraces at Machu Picchu are not megalithic, but seem to flow from earlier structures. Note the larger, megalithic stones in the walls at right. Perhaps there were several phases of construction here, as at Ollantaytambo.

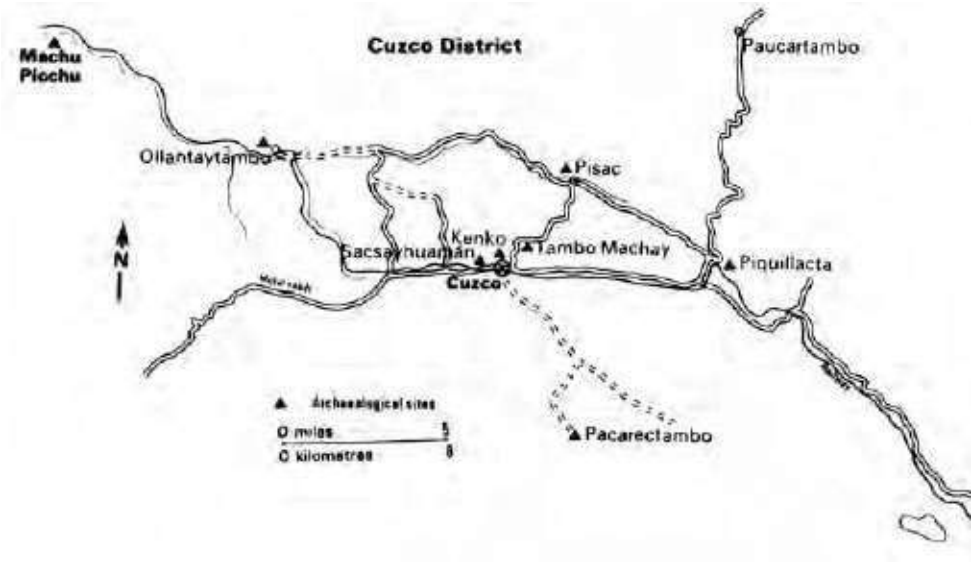
One of the megalithic walls at Machu Picchu.

A view of the northern wall of the megalithic Main Temple

A view of the northern wall of the megalithic Main Temple.

One of the megalithic walls at Machu Picchu.

An aerial photo of the mysterious Great Wall of Peru located in the north of the country. Perhaps it was meant to keep people like the Incas out.



A WEX expedilion including Chris Dunn, somewhere on the trail near Ollantaytambo.

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